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DEVELOPING ACCEPTANCE OF OPTIMIZED MANNING IN DD-21: A STUDY OF CHANGE MANAGEMENT

by

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This thesis examines the plans for assessing and mitigating resistance to optimized manning. The Land Attack Destroyer (DD-21) will be a new surface warship designed to operate with a seventy-five percent smaller crew than today's Destroyers. This dramatic reduction in manpower is part of Optimized Manning, and will likely require equally dramatic changes in training, maintenance, and personnel management. Change management theory says that implementing radical changes to an organization's culture and power structures often incurs resistance. Data was derived from the writings, presentations and interviews with DD-21 program officers and consultants. While there is no formal plan for building acceptance of optimized manning, findings indicate that program developers and other stakeholders recognize the potential for resistance and the need to manage it. The main sources of resistance include: cost of automation and technology; Navy culture; legacy systems; designers and sponsors; and a tendency to oversell programs. This thesis recommends the systematic definition of stakeholders and sources of resistance for optimized manning, the selection of a change leader, the creation of activity and commitment plans and a robust feedback system.

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DEVELOPING ACCEPTANCE OF OPTIMIZED MANNING IN DD-21: A STUDY OF CHANGE MANAGEMENT

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ABSTRACT

This thesis examines the plans for assessing and mitigating resistance to optimized manning. The Land Attack Destroyer (DD-21) will be a new surface warship designed to operate with a seventy-five percent smaller crew than today's Destroyers. This dramatic reduction in manpower is part of Optimized Manning, and will likely require equally dramatic changes in training, maintenance, and personnel management. Change management theory says that implementing radical changes to an organization's culture and power structures often incurs resistance.

Data was derived from the writings, presentations and interviews with DD-21 program officers and consultants. While there is no formal plan for building acceptance of optimized manning, findings indicate that program developers and other stakeholders recognize the potential for resistance and the need to manage it. The main sources of resistance include: cost of automation and technology; Navy culture; legacy systems; designers and sponsors; and a tendency to oversell programs. This thesis recommends the systematic definition of stakeholders and sources of resistance for optimized manning, the selection of a change leader, the creation of activity and commitment plans, and a robust feedback system.

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I. INTRODUCTION

> There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain of success than to take the lead in the introduction of a new order of things, because the innovation has for enemies all those who have done well under the old conditions and lukewarm defenders in those who may do well under new (Machiavelli, The Prince).

A new order of things has been proposed for the Surface Navy of the twenty-first century. In response to a redefined naval strategy that focuses on near-shore regional conflicts and in recognition of austere long-term budgets, the Naval Sea Systems Command has initiated the planning and design process for a new family of warships: the Twenty-First Century Combatants or SC-21. The first member of that family is to be the Land Attack Destroyer (DD-21) and a major design specification is a crew that is substantially smaller than that currently on any ship of the same size and mission as this new vessel.

The push behind the requirement for a reduced crew is the high cost of manpower over the life of a ship. Navy designers also recognize that such a radical change in crew size will require a change in many of the Fleet's current equipment and procedures. As a result, the proposals for DD-21 promise to revolutionize the way the U.S. Surface Fleet trains, supports and fights its ships. Organizational change theory calls such events in the life of an organization discontinuous changes (Nadler & Tushman, 1988). Theory also

says that these types of changes, when they occur in long-established, stable organizations such as the United States Navy, are likely to be met with skepticism and resistance.

This thesis examines the how the DD-21 program plans to manage resistance to optimized manning within the Fleet operating core and other stakeholders. Mintzberg (1989) classifies those members of an organization who perform the basic work of the organization as the operating core. For the purposes of this study, the operating core pertains to Fleet personnel. However, Ansoff and McDonnell (1990) state that influential internal and external stakeholders should be considered in an organization facing dramatic change.

This thesis compiles a data set related to the DD-21 process plan for identifying and managing resistance within the operating core and other stakeholders. It then compares that data to change management theory for managing innovation in a large, complex organization. The data set was developed from the writings and presentations of principal members of the DD-21 program office responsible for the reduced manning initiatives. Archival data was supplemented with video teleconference and telephone interviews of members of the program office to answer five research questions:

1. Who are the stakeholders in optimized manning and what role will they play in successful implementation?
2. What are the expected major sources of resistance?
3. What are the major facilitators for successful implementation of optimized manning?

4. What are the specific plans for developing acceptance of optimized manning among the stakeholders?

5. What is the relationship between DD-21 and the overall set of changes affecting the Surface Fleet?

This evaluation of the change management process is intended to provide an assessment of the plans and policies of the program office early in the life of the DD-21 project. Such an assessment should provide valuable feedback to aid the process planning in its formative stages.

Chapter II provides background information on DD-21 as well as three other programs affecting the future of Surface Warfare. It also contains a brief summary of some reactions from the Fleet to those projects. Chapter III presents a review of change management literature, especially theories concerning resistance management. Chapter IV outlines the sources of archival data and the interview process. Data related to the research questions are presented in Chapter V. Chapter VI contains a comparison of the data and theory, including conclusions and recommendations for improvement of the plan, and suggested areas for further research.

II. THE LAND ATTACK DESTROYER (DD-21)

A. PROGRAM BACKGROUND

In 1992 the Secretary of the Navy (SECNAV), in concert with the Chief of Naval Operations (CNO) and Commandant of the Marine Corps (CMC), published the white paper "...From the Sea," in response to the changing national security environment following the end of the Cold War. According to that planning statement, the downfall of the Soviet Union had triggered a fundamental shift in strategic focus. Gone was the Maritime Strategy of the 1980's with its scenarios for open-ocean, global warfare. The Navy of the twenty-first century would concentrate on littoral warfare and maneuver from the sea.

Littoral operations are those near-shore missions conducted within twenty-five miles of a coastline. The primary requirement of a strategy focused on the littorals is the ability to transition from the open ocean to the near-shore and from the near-shore to dry land and back again. The main objective of such operations is the projection of power inland and the influence of events, both combat and non-combat, ashore (SECNAV, 1992). In the new strategy statement, the CNO put forth a series of immediate tasks aimed at supporting the vision of regional warfare "...from the sea." One of those tasks is the design and procurement of systems that will be able to fight and survive in the littoral area. The Land Attack Destroyer (DD-21) is to be one of those systems.

The Operational Requirements Document (ORD) for DD-21 was approved in November 1997. In it, the mission of the new Destroyer is laid out and it includes forward presence/deterrence, land attack in support of the ground campaign, Joint/Combined battlespace dominance in the littoral region, and the ability to conduct a wide variety of operations other than war. DD-21 is to be a replacement for both the SPRUANCE and OLIVER HAZARD PERRY classes of warships and is expected to enter service in 2009 at a price of $750 million each (CNO, 1997).

The pressures of mission and cost are at the heart of the DD-21 design. It is logical that a ship's intended mission dictates its form, particularly when that mission is central to a new national strategy. However, costs, especially life-cycle costs, have taken on an especially vigorous role in the design and operating concepts of this new vessel. It is expected that military budgets will have near zero-growth well into the twenty-first century. Because crew costs have long dominated surface ship life-cycle costs, amounting to nearly fifty percent over a twenty year life span, reducing the size of the crew promises important monetary benefits (Bost, 1995). In response to these pressures, the ORD directs that "[human systems integration] (HSI) will be used to minimize system life-cycle costs and maximize the performance effectiveness, reliability, readiness and safety of the ship and crew" (CNO, 1997, p. 10).

B. REDUCED MANNING

In a 1996 memorandum on DD-21 manpower goals, Rear Admiral Murphy, then Director of Surface Warfare (N86), assigned a target for crew size of ninety-five officers and sailors including an embarked air detachment. The number is actually at one end of a manning spectrum with 150 being the upper threshold (NAVSEA/PMS-500M, July 1998). Even at the high end of the range however, that target represents a near sixty percent reduction in manpower from today's 350-person crew for a vessel similar in size and mission to the proposed Destroyer.

The intended means to that end goal is to be a revolutionary application of technology and a general overhaul of standard operating procedures. According to the ORD, manning levels will be reduced by a series of Human Systems Integration (HSI) measures including functional design and automation to reduce watch station requirements, the elimination and/or combination of traditional shipboard ratings, the automation of training and technical support and the cross-training of skills between ratings (CNO, 1997).

In response to the directives of the ORD, the DD-21 project office has initiated a top down functional analysis that starts with an assumed beginning manning level of zero and then requires industry designers to justify human involvement with any particular system (Bush, 1998). Furthermore, the manning goal of ninety-five has been established as a Key Performance Parameter (KPP) in the design of DD-21 and the sailor is considered to be a component of the engineering process rather than as an unlimited resource. Allocation of

all three components, people, hardware and software, is to be carried out in terms of tradeoffs between life-cycle costs and performance (Bush, 1998).

There are two ultimate goals of this effort to optimize the crew size and composition on DD-21. First is a reduction in lifetime owner cost of the ship due to a smaller manning requirement and therefore a smaller recruiting, training, pay and benefit infrastructure. The second is described as an increased emphasis during the design and implementation of the program on human performance, productivity, safety and crew quality of life. It is stated by the program office that the end result of this increased attention will be enhanced job satisfaction and greater acceptance of technology initiatives (Bush, 1998). The focus of this research is to identify and evaluate the change management plans that particularly address this aspect of DD-21 implementation.

C. OTHER CHANGE EFFORTS

DD-21 is not the only major change underway affecting Surface Warfare. There are a number of projects now being developed or implemented whose success or failure could have significant consequences for the surface fleet. For the purposes of this research, three of them warrant introduction. They are: Smart Ship, the Naval Research Laboratory's Damage Control-Automation for Reduced Manning (DC-ARM) project, and the CNO's Inter-Deployment Training Cycle (IDTC) Workload Reduction program.

1. Smart Ship

Smart Ship was initiated in 1995 as a result of a report by the Naval Research Advisory Committee (NRAC) on reduced manning stating that the major obstacle to changes in manning structure was culture and tradition rather than a lack of technology and know-how (CNSL, 1997). Smart Ship was to be a challenge to the traditional manning and operating procedures of the U.S. Surface Fleet, and its goals for reduced manning, while on a more modest scale than those of DD-21, are very similar. The program charter calls for a reduction of manning and related cost savings on present and future surface vessels through the application of innovative technology and the overhauling of operating procedures (NAVSEA, 1998).

To date, the magnitude of those reductions does not approach the goals set for DD-21, however, they still merit the attention of this study. According to a program status report in September 1998, the lead ship in the program, USS YORKTOWN (CG-48), has demonstrated a reduction of crew size between ten and fifteen percent or forty-four enlisted and five officers (NAVSEA, 1998). The viability of this new manning structure was demonstrated during YORKTOWN's normal training and inspection cycle prior to her five-month deployment to the Caribbean Sea and one-month evaluation period with the USS GEORGE WASHINGTON (CVN-73) Battle Group. During this period she was assessed by the Navy's combat readiness, manning and operational testing organizations with the result that her crew, equipment and operating procedures were found to be effective and ready to carry out any assigned duties (CNSL, 1997).

2. DC-ARM

The Naval Research Laboratory (NRL) created the DC-ARM program in 1995 in reaction to the same study that launched Smart Ship. The purpose of the program is to reduce the manning infrastructure of the damage control organization onboard ships through the application of automation technology. The stated objective is the development of a damage control system capable of automated detection, assessment, and reaction to a fire or flooding situation without the use of human investigators, decision-makers or communicators (NRL, 1998).

The manning goals for DC-ARM are set into a three-phase development and evaluation process. The first phase seeks a thirty-five percent reduction in current manpower levels by developing new organizational structures and procedures for the application of current damage-control technologies. This phase will establish a manpower baseline for the next two phases that will demonstrate the feasibility of further reductions through the application of new technologies. The goal of the second phase is a sixty percent reduction from current manning by adding to the phase one baseline a set of automated sensory and control technologies that will allow for the elimination of human investigators and the centralization of supervisory control. In phase three, the goal for damage control manning is sixteen personnel covering the survivability command center and three response teams. Given that those same functions now require 110 sailors, such a goal represents an eighty-five percent reduction in damage control manpower (Farley, 1998).

The testing of each phase is being carried out at the NRL facility onboard ex-USS SHADWELL. This former amphibious ship has been rebuilt to serve as a floating laboratory that enables researchers to conduct full-scale fire and flooding scenarios to demonstrate technology applications. These evaluations involve real fire, smoke and water within the confines of the test ship and are conducted with little or no simulation of the effects of battle-damage. The DC-ARM research on SHADWELL will be conducted with Fleet operators and will build on lessons learned from Smart Ship and the submarine community's experience with small crew damage control (NRL, 1998).

3. IDTC Workload Reduction

The inter-deployment training cycle (IDTC) is the scheduled period following a six-month deployment during which a ship's officers and crew are expected to transfer personnel, conduct training of individuals and teams, perform maintenance and equipment upgrades and in all other respects, get the ship ready for the next six-month cruise. Currently, the IDTC is twelve months or roughly twice the length of a deployment and is considered in many ways to be an administrative burden on the backs of the fleet (CNO, 151947Z OCT 98).

In an effort to reduce that burden, increase time allotted to commanding officers for training, and improve the quality of home life for Sailors, the CNO initiated a program in July of 1998 to reexamine the way the Surface Fleet conducts its training and administrative business. Specifically, the appropriate commanders were directed to review the current structure of inspections, evaluations and administrative requirements in order

to reduce the non-deployed workload and return twenty-five percent of the IDTC to the discretion of the individual commanding officer (CNO, 201200Z JUL 98).

At the heart of this directive is a requirement that items, whether equipment, records or supplies, would be inspected only once during the cycle. In the past, any individual item could be inspected more than once depending on under how many areas of responsibility that item fell. For example, both the aviation and engineering/damage control communities examined aviation fire fighting equipment. Under this new vision, all of the controlling authorities are directed to cooperate in a general effort directed towards the consolidation and cancellation of dozens of redundant inspections and evaluations (CNO, 151947Z OCT 98).

The end result of this realignment process is to be a streamlined system that receives a ship from its post-deployment stand-down and moves it quickly and effectively through its maintenance, training and evaluation phases and delivers it to the Fleet Commander ready for the Carrier Battle Group. The new process is intended to allow for guaranteed leave and stand-down periods, more time for training as determined by the ship's commander and a more stable schedule for the ship and therefore a more stable life for the crew.

D. REACTION

Machiavelli's statement about change presented in the introduction suggests that those instituting a large-scale innovation can expect reactions to their proposals to range from lukewarm to hostile. In view of that claim and given that the introduction of DD-21 promises to bring radical change to an old and well-established organization, one might

expect the reaction from the Fleet to be marked more by skepticism than enthusiasm. The following limited research in support of this study's proposal development indicates that that may indeed be the case.

1. Survey

In an attempt to develop an initial sense of opinion and reaction to the manning proposals of DD-21, a limited survey instrument was developed and distributed to members of the operating core of the Fleet. The sample was very small (n=11) and not random. The subject group consisted of two O-5s, two O-4s, one O-3, three E-7s, one E-8, one E-9 and one CWO-4. All serve in Surface Warfare. A copy of the survey instrument is located in Appendix A.

An interesting characteristic of the responses is that the only subject to indicate a confident reaction to DD-21 was a former crewmember of Smart Ship. Of the other subjects two were undecided and eight were skeptical. The reasons for skepticism seemed to depend upon the individual's background. For example, a post-Executive Officer indicated that he was concerned about housekeeping, such as cleaning and interior painting, manning for General Quarters, and manning for underway replenishment. A Master Chief Petty Officer believed there was a potential for problems with training, corrosion control and in-port duty-section manning. Only the individual who had served on YORKTOWN and had seen the results of the Smart Ship program firsthand expressed confidence in the reduced manning concepts of DD-21. This Damage Controlman Chief stated that anything is possible, but that large scale manning reductions will require high-cost automation and difficult choices regarding new operating philosophies.

2. Conference

In October 1998, the Reduced Manning division of the DD-21 program office presented their proposals to First Class Midshipmen at the United States Naval Academy. Following the presentation, the students were asked for their questions and comments. A few common themes were present in the questions. First, there was a concern about adequate redundancy of the automated systems that would make the small crew of DD-21 possible. The Midshipmen also questioned the ability to train new operators and maintainers while still operating and maintaining the ship's systems with such a limited crew. Lastly, there was a general concern for the possibility for overloading a small crew and driving down their quality of life both at sea and in port. Overall, the Midshipmen seemed to be skeptical. One future officer clearly expressed his resistance to the optimized manning concept, calling the plan for DD-21 a "nice fairy tale" with "no solutions to existing problems and too many 'I don't knows'" (NAVSEA/PMS-500M, October 1998, p. 4).

3. Articles

Finally, there have been a variety of views on the subject of reduced manning expressed in the pages of professional naval journals. Anthony DiGiorgio (1998), an electrical engineer, was involved in past automation efforts for the Navy, specifically the design of the control systems for the propulsion and electrical plants of gas-turbine warships. In his article, DiGiorgio (1998) expresses concern for Navy leadership rather than technology. He asserts that the concept of automation is not well understood by most of the surface force, and that past efforts to automate ships, such as the SPRUANCE

Destroyers, failed because Navy leaders chose to fall back on tradition and place sailors in front of consoles that were designed to react in microseconds, faster than a human could ever diagnose and correct a problem. He claims the Navy has had smart systems on their ships for a long time and those systems have proven their ability when given the chance. The concerns regarding Smart ship and DD-21 can, in his opinion, be mitigated by educating decision-makers to ensure they understand both the systems that already exist and those that are proposed for the future.

Lieutenant Chuck Good (1996) expresses a very different opinion in his article "who's left to paint?" He asks that question and then cites a series of basic shipboard evolutions such as painting, line-handling and administrative record keeping that the Navy has traditionally carried out with large amounts of manpower. He states that the problem with reducing crew size is not the technological risk associated with automation, but the functional risk of unmet manpower requirements. He states that the Navy has traditionally designed its ships for, and carried out its missions with a large crew that included extra hands for periodic evolutions and large-scale emergencies. LT Good believes the Navy should consider that tradition to be a core competency and not abandon it.

Another interesting opinion is that of Rear Admiral Lyons (1998) who, while serving as president of the Board of Inspection and Survey (InServ), wrote an article about damage control and reduced manning. In it, he claims that within the Navy, there is significant concern about the ability of small crews to handle the requirements of shipboard maintenance and damage control. And, while commercial technology may help alleviate some of the maintenance demands, he believes that the traditional approach of

overpowering damage with manpower can only be changed with a shift in the mind-set of the Fleet. He acknowledges the fiscal realities that are driving optimized manning and states that the past assumption that large crews will always be available is no longer valid. His vision of the future damage control party is based on the idea that every individual onboard will be a damage control expert. When a ship is damaged, only those watches that are most vital will remain manned, all other personnel will respond to the emergency as a single team (Lyons, 1998).

The Admiral then poses a series of questions regarding the application of technology to tactical problems. He asks, if technology can help improve the situational awareness, reaction time and accuracy of the tactical team, then why can it not do the same for the damage control team? If the answer is that it can, then he believes that a smaller crew can indeed handle the demands of combat damage control (Lyons, 1998).

E. SUMMARY

The Land Attack Destroyer (DD-21) is being developed in response to a new set of mission priorities for the Navy's Surface Fleet. The concept of optimized manning has been proposed in response to a new set of budgetary demands and technological opportunities. Together, they form an important element in a set of organizational changes that includes Smart Ship and DC-ARM. All of those changes, but particularly DD-21, indicate a movement toward a Surface Navy that will be more dependent on technology and automation, and less dependent on manpower.

The small sample of reactions presented in this chapter suggest that some members of the Fleet may not have a positive reaction to the changes contained in the proposals for DD-21 and optimized manning. If the officers and sailors of the Surface Fleet resist the concept of optimized manning, as change theory indicates they might, then the designers and implementers of DD-21 will face a substantial obstacle to the successful introduction of this new warship.

This thesis examines the plans for managing organizational resistance, particularly during this early developmental phase. It seeks to answer five questions regarding the stakeholders of and the possible sources of resistance to optimized manning, the major facilitators of successful implementation, the plans for building acceptance of optimized manning and the relationship of DD-21 to the other changes underway in Surface Warfare.

Problems with past efforts aimed at system automation and crew reduction, such as the engineering plant in USS SPRUANCE, suggest that an examination of change management theory, particularly theory dealing with managing resistance may provide important insights for the successful design and implementation of optimized manning.

III. MANAGING ORGANIZATIONAL CHANGE

A. MANAGING COMPLEX CHANGE

In the preface of their book "Organizational Transitions" Richard Beckhard and Reuben Harris (1987) state that managers of large-scale change face a dilemma in trying to redefine the organization while still maintaining enough stability to continue to do whatever the organization is supposed to do. This dilemma provides the organization's leadership with a new set of challenges and new requirements for managing innovation. Clearly, a significant challenge for the leaders of Naval Surface Warfare is the successful introduction of DD-21 with all of its revolutionary changes, while still maintaining readiness throughout an existing fleet that was designed for markedly different requirements of mission and economy.

The challenge is made more difficult by the conflicting pressures identified by Richard Walton (1987) in his discussion of managing innovative change. Walton uses the term *metacompetence* to describe the strategic ability of an organization's leadership to address five elements of innovation needed to respond to changes in the organization's environment. These five elements relate an organization's capacity for innovative change to its *guiding model*, *economic necessity*, *social values*, *institutional unity*, and *competence*.

As an illustration, the new guiding model for the Surface Navy envisions a future fleet of modestly crewed and technically advanced warships. Economic necessity is driving the former and a high level of technical competence in today's Fleet may enable the latter.

The need for low-cost worldwide presence has generated a requirement for significantly smaller crews because of the accompanying promise of reduced life-cycle costs.

The social values of the Surface Fleet may not yield to such radical innovation. Current manning and operating guidelines are built on decades of tradition and experience. A drastic departure from that tradition and experience would predictably meet with substantial resistance from Fleet operators. The ability of Navy leadership to deal adequately with such conflicting forces, to adapt to a complex global security environment, to capitalize on the competence of the organization and develop support for the innovative process is crucial for the long-term effectiveness of the Fleet. These are some of the challenges in managing large-scale, complex change.

1. Open-Systems Planning for Change

The open-systems planning model presented by Beckhard and Harris (1987) is a seven-phase process to help managers analyze their environment, their organization and their expectations for the future. The end product is a set of cost-effective options that will take the organization from its present state to some desired future state and place it in a position more capable of dealing with and succeeding in a changing environment.

Open-Systems Planning Process

1. Determine the "core mission" of the organization.
2. Map the demand system.
3. Map the current response system.
4. Project the probable demand system, given no change in organization impact.
5. Identify the desired state.
6. List activities necessary to achieve the desired state.
7. Define cost-effective options.

Figure 3.1 Open-Systems Planning Process (Beckhard & Harris, 1987, p.13)

Applying this model to the DD-21 case shows that the Navy strategic white papers "... From the Sea" and "Forward ... from the Sea" recast both the core mission and the demand system for the U.S. Surface Fleet. By changing the center of strategic focus from blue water to the littoral, the core mission was altered to include at its center, the ability to operate near a shore in direct support of a land engagement. The new demand system now includes all of the hazards associated with naval combat within twenty-five miles of a hostile coast. The desired future state will be a fleet built around a family of ships designed to meet the core mission requirements in the face of the new demand system. At the end of that planning and evaluation process, DD-21 was chosen as the most cost-effective option.

Item six of the process model points out the need to develop an activity plan leading to the desired future state. This plan should address the appropriate elements identified by Walton (1987), and with regard to DD-21, the emphasis of the process plan should be on enhancing the ability of the Surface Navy to meet the demands of economic necessity

while maintaining support for the innovation. The effectiveness of that plan depends on the conflicting or supporting social values, the internal unity or the predisposition to cooperate and develop consensus, and the competence for innovation within the organization.

2. The Change Process

The change process can be thought of as a three stage model with a *future state*, defining the organization's desired structures and processes, the *current state*, and the *transition state*, the movement of the organization from one state to the other (Beckhard & Harris, 1987). The connection between the open-systems process and this three-stage model is that the output of the open-systems model, the optimal solution for the future environment, becomes the goal future state. The transition state represents the change management process and the activity plan for accomplishing that future state. The open-systems concept is relevant here because complex external and internal forces must be planned for, balanced and adapted to in order to optimize the chances of success in an innovation of this magnitude.

The current state of the Surface Fleet is well defined and represented by the current class of Destroyers, USS ARLIEGH BURKE (DDG-51), and their traditional manning and support structures. The proposed future of Surface Warfare represented by DD-21 is currently at a stage somewhere between defining the future state and initiating the transition state. While there is a fairly clear vision of the desired future capabilities of the ship itself, much of the hardware, including the hull, have not taken form. Such critical mission areas as maintenance support, training (both onboard and ashore), and final crew

size and composition are also undefined, so the desired future state of the Surface Force is in flux.

The transition from the current state to an undefined future is underway. Public discussion of optimized manning as a vision of the future for surface ship doctrine began as early as 1995 in an *U. S. Naval Institute Proceedings* article co-authored by Bost, Mellis and Dent. In that article, the tradeoff between crew size and system automation was described as a choice between traditional manning paradigms and more efficient mixture of man and machine. The discussion of small crews and automated systems continues today in nearly every issue of that journal. Additionally, the DD-21 program office has published a set of milestones for hardware development and testing begun in FY97 and ending in FY01 (S&T Webbook, Nov 98). The focus of this thesis is on elaborating the specifics of the transition plan related to manning issues.

This thesis also attempts to describe the *critical activities* of the transition phase that have been defined at this early planning stage. A critical activity is an element of the transition phase whose success or failure directly impacts the overall success or failure of the change process itself. These and all other critical activities, such as start dates, meetings, communications, training sessions and structure changes that are critical to a successful transition, should ideally be part of an overall *activity* or *change plan* (Beckhard & Harris, 1987).

With regard to the focus of this study, that activity plan should include a set of *interventions*, or starting points for the change transition. These intervention points are significant because either they will provide early planning and implementation successes,

or they are important decision nodes, or they identify points in the organization that are having trouble dealing with the upcoming change (Beckhard & Harris, 1987). The potential skepticism and resistance within the operating core described earlier falls into the last category. Figure 3.2 maps the change management process up to the transition state.

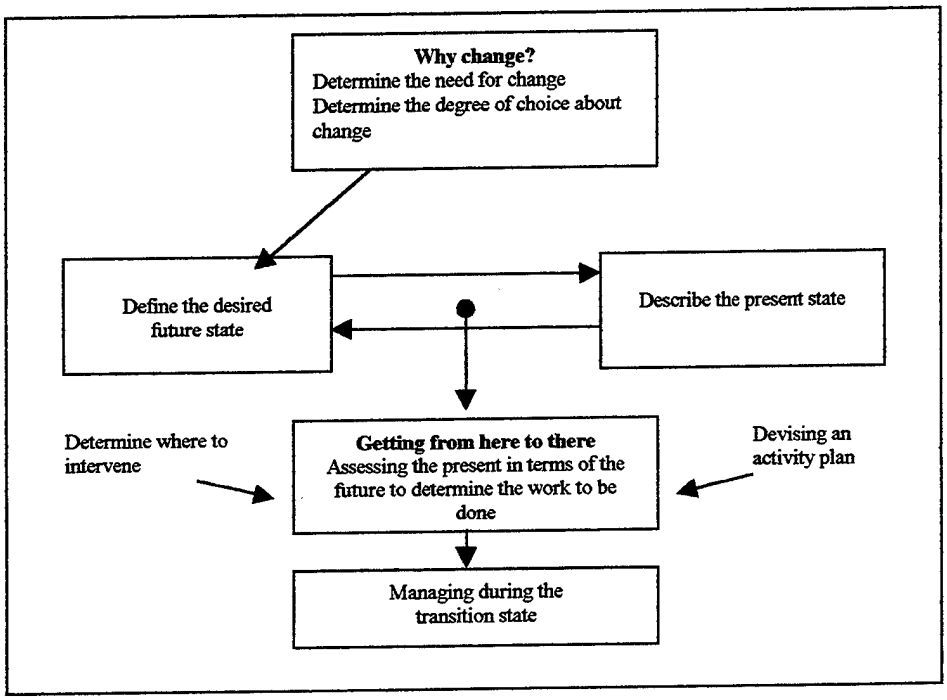


Figure 3.2 Change Management Process (Beckhard & Harris, 1987, p.81)

3. Commitment Strategies

As the statement of Machiavelli in the introduction suggests, resistance to change, particularly in an organization as stable as the military, is to be expected. Tichy and Devanna (1990) state that people resist change because they need time to assess the cost and benefits of that change to them. They suggest that there are three major technical reasons for resistance to change within an organization: (1) habit and inertia, (2) fear of

the unknown or loss of organizational predictability, and (3) the sunk costs of current methods. In order to minimize such resistance, leaders must restructure and reframe the ways in which they and the other members of the organization think about and react to common problems and their possible solutions.

Regardless of the source of resistance, however, there are individuals and groups, within the organization and its stakeholders, who must be committed to the success of change in order for it to be successfully implemented. According to Beckhard & Harris (1987) there is a *critical mass* of individuals within each group that must actively cooperate in the planning and implementation of change, and they suggest the creation of a *commitment plan* in order to secure the support of that critical mass. Such a plan has four elements: identify the critical stakeholders, define the critical mass, develop a plan for gaining the commitment of that mass, and create a feedback system to assess progress. The commitment plan is a management tool designed to overcome what Ansoff and McDonnell (1990) define as *behavioral resistance* within an organization.

B. DEVELOPING CULTURAL ACCEPTANCE

1. Building Acceptance Versus Overcoming Resistance

The phrases "building acceptance" and "overcoming resistance" tend to be used interchangeably, but they have different meanings. An effort to build acceptance is aimed at developing the commitment, meeting the expectations and gaining the active cooperation of both internal and external stakeholders. In contrast, measures designed to overcome resistance may have as a goal nothing more than preventing active opposition

(Beckhard and Harris, 1987). This study focuses more on building acceptance than overcoming resistance.

2. Behavioral Resistance

Resistance to organizational change is classified as behavioral when it literally manifests itself in the behavior of individuals. Procrastination, inefficiencies, slowdowns, and sabotage are some of the many consequences of unresolved resistance and these problems may present themselves at any point in the change process (Ansoff & McDonnell, 1990). Typical attitudes that may attach themselves to the DD-21 project include *rejection,* "There's nothing wrong with the Fleet that a proper budget wouldn't fix," and *regression,* "Let's forget this pie in the sky and get back to the proper way of running a ship," to name just two. When this type of resistance is found in the previously identified critical mass, there is real a danger of having those individuals balk and withhold their cooperation.

Such resistance is pervasive and has troubled previous attempts by the Navy to reduce manning levels through the application of automation. Regression plagued the SPRUANCE Destroyer program when, due to early equipment problems, engineering spaces that were designed to be unmanned were at first temporarily, and then officially manned full-time in accordance with new operating guidelines designed to minimize the perceived risks of automated machinery (DiGiorgio, 1998). Only now, some twenty-four years after the introduction of the gas-turbine propulsion plant, has Smart Ship begun to take advantage of the technology invested in those ships by removing the full-time watch. Those individuals originally responsible for developing the operating guidelines for the

new technology did not, in the end, believe in that technology. When given the opportunity, they regressed to the old way of running an engineering plant and the innovative process was stopped cold.

The following is a list of factors that may contribute to behavioral resistance within an organization:

1. The degree of discontinuity in the historical culture and power structure implied by the change.
2. The length of the period over which the change is introduced.
3. The threats/insecurities/loss of prestige/loss of power implied for key individuals.
4. The expected contribution by the change to the success/survival of the organization.
5. The strength of positive/negative loyalty toward the organization felt by the participants.
6. The strength of the culture and power drives at the respective power centers. (Ansoff & McDonnell, 1990, p.412)

If the change represents a dramatic break with the organization's historical culture and structure, resistance to the change will increase. If the time available for the transition is too short or the threats to the power of key individuals perceived to be too great, resistance will increase. If the members of the organization do not expect the change to adequately contribute to the survival of the organization, resistance will increase. However, the relative strength of the previous factors depends on the loyalty of the members and the strength of the organization's culture. For example, when members of an organization are very loyal, and they believe a given innovation is critical to the survival of the organization, they will be more supportive of the change effort.

Because optimized manning can be interpreted as a radical departure from the current state of Surface Warfare, implementation may encounter problems due to many of these

factors. The cultural upheaval that seemingly would accompany a seventy-five percent reduction in manning, and the shift in power structures that are implied by a general transformation of operating procedures, could trigger the type of resistance Ansoff and McDonnell indentify.

Everett Rogers (1995) approaches the same problem of building acceptance of a change from a different direction. Instead of examining the sources of resistance, he identifies five variables or attributes of an innovation to explain the speed at which that innovation is accepted by an organization. Those variables are: (1) the perceived *relative advantage* of the new system over the current one, (2) the *compatibility* between the new system and the organization's values, past experiences with change, and the needs of stakeholders, (3) the *complexity* of the new system from the perspective of the adopters, or in this case, the operating core of the fleet, (4) the *trialability* or allowance for limited experimentation, and finally, (5) the *observability* of the results by others in the organization.

An examination of the DD-21 program indicates that these five factors can work in contrary directions, and with varying degrees of force. For example, the promised cost-savings and quality-of-life improvements would yield a relative advantage in favor of acceptance. However, the possible compatibility problems between the new manning and operating structures and the experiences of Fleet Sailors and the complexity of such a sweeping change could prove to be very strong factors working against acceptance. The trialability and observability of the DD-21 program would depend on the method of implementation. If it were broken up into increments, those smaller projects could be

tested and the results published for the evaluation of the fleet operators. Such a measured approach might tend to break down the overwhelming nature of the entire project and possibly mitigate the potentially negative factors.

3. Building a Launching Platform

Ansoff and McDonnell (1990) describe a *launching platform* for an organizational change that is similar in form and purpose to the change management processes presented by Beckhard and Harris (1989). The main distinction between them is that the launching platform is specifically focused on building acceptance of the innovation, in support of the process, rather than on managing the entire change process. The launching platform is designed to:

1. Minimize startup resistance.
2. Marshall a power-base sufficient to give the change momentum and continuity.
3. Provide a detailed plan for the change process that assigns responsibilities, resources, steps and interactions through which the change will be carried out.
4. Include behavioral features that will optimize the acceptance and support for the new strategies and capabilities. (Ansoff & McDonnell, 1990, p. 413)

It is at this point of building the launch platform that the work of Ansoff and McDonnell is closely aligned with that of Beckhard and Harris. Where the latter called for the identification of a critical mass and development of a commitment plan, the former recommend conducting a *resistance and behavioral diagnosis* in order to create *a cultural/political support/resistance map* (Ansoff & McDonnell, 1990). Both yield a list of those groups and individuals who are vital to the change implementation and must

therefore come to accept and support the change. Because these theories are so closely aligned, this study will use much of their terminology interchangeably.

Once the resistance map is produced and the relevant groups and individuals have been identified, there are three additional steps in the process for building acceptance. First, a pro-change climate must be created by eliminating resistance-triggering factors such as misperceptions, exaggerations, fears and anxiety through education and information programs that ensure the entire organization has a clear and accurate picture of the good and bad elements of the upcoming change. An innovation that has a high level of trialability and observability (Rogers, 1995), especially in limited, incremental steps, would make this effort even more effective. There must also be an effort to build a pro-change power base through a system of coalition building, power shifting and rewards in order to place more power behind those groups and individuals who are critical to the success of the change and/or are more likely to give it early support (Ansoff & McDonnell, 1990).

Next, the change implementation plan needs to have behavioral features built into it. Those members of the organization identified as being critical for successful implementation must be included in decision making when leadership is developing the process plan. In contrast, those individuals and groups who will most likely continue to resist the change, no matter what, should be placed as much as possible on the periphery so that they do not poison the entire change effort. However, Ansoff and McDonnell (1990) note that the application of the power to remove resistors should be used as a last resort.

Ansoff and McDonnell (1990) call for a *contagion approach* to build early acceptance by starting implementation with groups already committed to the change and, after rewarding their success, spreading the change to other parts of the organization. Additionally, the change itself should be spread over as long a time period as possible in order to reduce pressure on the organization's members. In the case of DD-21, the future vision was published as early as 1995 while the ship was not expected to be in service for another 10 years (Bost, 1995). Other articles, symposia and briefings have followed in a type of education campaign. The details of these efforts will be examined in a later chapter but they mark an early starting point in the program that has opened the DD-21 proposals for discussion and given the project office an avenue to begin winning acceptance from Fleet operators.

The final step in building a launching platform deals with managing the follow through of the process. Because no change implementation is a simple overnight event and because there are always opportunities for unforeseen obstacles to develop, there needs to be a well-planned management program in place that follows the change process through to the end. Ansoff outlines seven elements of this management process, but three of them merit particular attention with regard to DD-21.

First and foremost, monitor and anticipate sources of resistance. This effort must include a robust feedback system to enable the managers to sense the building up and relief of resistance within the organization and shift attention and resources accordingly. Second, as already alluded to, there should be projects aimed at transforming culture and power structures. Lastly, Ansoff and McDonnell (1990) warn that the change is not fully

implemented until it is *institutionalized*, meaning that the power structures, operating procedures, reward systems and culture associated with an innovation, such as optimized manning, have become supportive of that innovation. Implementation managers must not claim victory too early. As in the case of the SPRUANCE Destroyers, those responsible for the transition must guard against regression even after the lead ship is at sea.

4. Managed Resistance

Managed resistance or the "accordion" method of change management (Ansoff & McDonnell, 1990) is designed to work under conditions of moderate urgency within the time limits determined by the environmental pressures. The managed resistance approach lies on a continuum between the two extremes of coercive and adaptive management. A coercive style in its purest form is authoritarian with little or no concern for the reaction and concerns of the organization's members. Resistance would simply be steam-rolled by the power of the command hierarchy. An adaptive style lies on the opposite end of the continuum and would be characterized by long time-lines, low urgency, heavy feedback and a very methodical change process that minimizes the factors that could escalate resistance. The name "accordion" is derived from the ability of this process to move between these extremes depending upon the time urgency of a given change requirement.

Managed resistance uses a *modular approach* where the planning process is subdivided into a set of modules that fit into a parallel planning and implementation program that expands or compresses depending on the time constraints (Ansoff & McDonnell, 1990). This parallel modular approach of the accordion method is more appropriate to the as yet undefined requirements of DD-21 than traditional sequential

planning/implementation methods. As individual requirements for DD-21 optimized manning are defined, the change timeline containing the planning/implementation modules will expand or contract depending on urgency. The parallel characteristic of the process reduces the chances of a problem or delay in one module from having a cascade effect on the entire process as might occur in a sequential plan. Furthermore, each module can be tailored to address a particular source of resistance or stakeholder or both. Figure 3.3 illustrates the accordion method timeline.

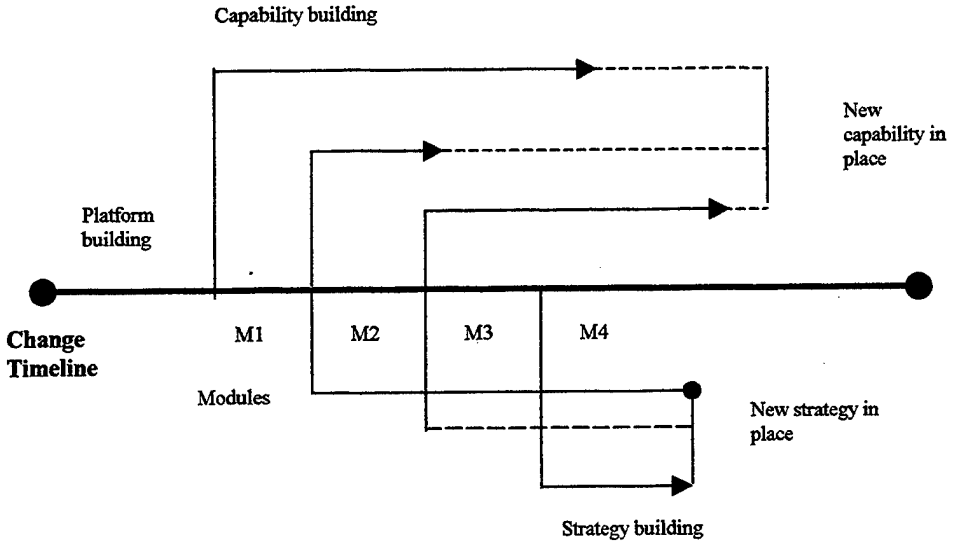


Figure 3.3 Parallel Planning/Implementation Modules of Accordion Method (Ansoff & McDonnell, 1990, p. 440)

The process begins with the organizational diagnosis of culture and resistance followed by the design of program modules associated with each of the possible sources of resistance throughout the entire change process. With DD-21, capability-building modules might include such things as damage control manning, corrosion control and space maintenance, and shore-based training support. As solutions to each of these areas

of concern are designed and rolled out, there is a parallel effort for the training and educating of the associated critical mass of stakeholders. In the case of damage control, a logical group requiring attention might be the damage control instructors and inspectors at the Afloat Training Groups. Strategy modules might deal with the changes in tactical emphasis from open-ocean combat to warfare in the littorals. All of these modules would proceed along separate time-lines under the control and guidance of the change managers who monitor success and failure through a matrix feedback system (Ansoff & McDonnell, 1990).

A positive characteristic of this approach is its ability to turn the entire change program into an incremental process, and to link the development of capability (human skills and attitudes as well as technologies) with defined strategic initiatives. With the accordion method, the organization is asked to swallow the change one mouthful at a time rather than all at once and it is therefore less likely to choke on the enormity of the entire project.

Managed resistance is described as a complex method that demands continual attention from top management and quite often it outstrips the design know-how of an organization's personnel. For these reasons, Ansoff and McDonnell (1990) state that outside consultants are commonly used for planning and design. Such external help is useful for conducting impartial strategic and resistance diagnoses and for developing a set of options that may threaten the current power structure. However, they caution that an essential element of this method of management is the continued involvement of the organization's leaders regardless of the role played by outside specialists. Specifically,

Ansoff and McDonnell (1990) state that those members of the organization who will be responsible for implementation of the program must also be included among the planners of the program. Their absence from the planning process risks building resistance within the very group that should be most supportive of the innovation.

5. The Change Leader

Tichy and Devanna (1990) describe the transition manager or transformational leader as an organizational steward who helps people get through a transition. They claim that the leader must recognize and understand the need to provide space and support for people as they work at interpreting and understanding the change. They present the change leader as a symbolic figure who must stay at the center of the change process.

With regard to the selection of the implementation leaders, Beckhard and Harris (1987) define an effective transition manger as an individual who has adequate *clout* for commanding the resources required for the project, *respect* of both the existing leadership and the change advocates, and effective *interpersonal skills*. When discussing DD-21, clout must include adequate authority within the military hierarchy the Surface Warfare community. This is particularly important because so many of the influential groups will most likely fall outside any direct chain-of-command of the project office. This situation also increases the demand for respect and trust between all stakeholders and the need for the transition manager to possess superior people skills because it is these traits that will empower that individual to begin and sustain acceptance building through discussion and demonstration.

C. SUMMARY

The optimized manning concepts imbedded within the DD-21 program portend dramatic changes for the U.S. Surface Fleet, and change management theory suggests that such dramatic changes often encounter resistance from among the stakeholders of an established system. Anticipating that resistance, identifying its sources and developing a plan to counter its effects are actions critical to the successful implementation of change.

A well designed launching platform for a large-scale change minimizes startup resistance. It gathers an adequate power-base, provides a detailed plan for the change process and has behavioral features that will develop acceptance and support for the new system. A change process plan can follow a modular approach that serves to break the total change effort into incremental steps, with each step being planned and implemented along an independent timeline. Such an approach can enable the change leader to diagnose potential resistance, and to monitor the effectiveness of efforts aimed at mitigating that resistance, including developing support and commitment for the success of the innovation.

IV. METHODOLOGY

The commitment plan is a critical element of the resistance management process discussed in the previous chapter. In its theoretical form, such a plan presents a series of actions or events that are designed to develop support within critical stakeholder groups for the change effort. Therefore, an examination of that plan should provide a glimpse of the inner workings of, and the reasoning behind the change management process. Unfortunately, because DD-21 is still in the early stages of planning, no explicit plan exists (Lugo, 1999). However, an examination of a resistance management process is still possible.

This thesis compares the explicit or implied commitment plan of the DD-21 program office with resistance management theory and develops from that comparison an evaluation of the strengths and weaknesses of the plan. The purpose is to assist the efforts of the program managers aimed at developing acceptance of the optimized manning concept. In the absence of a tangible commitment plan, this study summarizes the opinions of DD-21 program managers regarding the management of resistance, and compares that summary with change management theory.

In order to develop an accurate and coherent synopsis of an implied resistance management plan, a set of individuals was identified within the DD-21 hierarchy who are closely linked to the development and implementation of optimized manning. A data set, focused on the topic of resistance, its perceived effects on innovation and methods for its mitigation, was then derived from the various writings, presentations and statements of

those individuals and/or their principle assistants. Finally, because the available archival data did not, in every case, address the specific topic of resistance management, a set of interviews was conducted with selected members of the DD-21 organization to enrich the findings.

A. IDENTIFICATION OF KEY INDIVIDUALS

Development and implementation of the concept of optimized manning is the responsibility of the PMS-500M office, one of six departments within the larger DD-21 program office at the Naval Sea Systems Command (see organization chart in Appendix B). The various tasks related to that responsibility have been further delegated to two principle assistants (PMS-500M1 and M3) and ten principle consultants. With regard to the subject of this study, the work of three of those consultants is particularly relevant.

Frank Lugo, a consultant for PMS-500M and member of the personnel working group, is heading the formation of an Integrated Process Team (IPT) for the purpose of studying the current Navy system, including operating guidelines, personnel processes, training programs and culture, that would be effected by the DD-21 program. Membership of the team includes manning consultants, NAVSEA, the platform sponsor N86, BUPERS, CNET, operational commanders such as SURFLANT and SURFPAC and other members of the Surface Navy's training and operating community. The number of individuals participating in the team vary with availability but average around fifty. The goal of the IPT is the creation of a Plan of Action and Milestones (POAM) that will lay out a series of actions leading ultimately to the successful implementation of optimized

manning (Lugo, 1999). One part of that POAM will address the issue of building acceptance of the coming changes within the Fleet.

Key members of the DD-21 program hierarchy include the program officer CAPT Bush (PMS-500), the manning/human systems integration department head J. Robert Bost (PMS-500M), consultants who form the four working groups under Bost, and Director of Surface Warfare (N86) RADM Mullen, his staff and consultants. Members of the N86 organization were included because that office is NAVSEA's customer for DD-21 and they provide significant input to the requirements definition and planning process (Maxwell, 1999).

B. ARCHIVAL DATA SOURCES

Archival data were collected from various sources both in print and through Internet websites. Printed sources include professional journals, Navy messages, meeting minutes, and seminar outlines. On-line websites include the Office of Naval Research's S&T Manning Affordability, Surface Combatant SC-21 and Surface Warfare Division N86. Because of strict rules governing industry competition and information disclosure, the DD-21 program office and/or N86 controlled access to the S&T website and release of the DD-21 Operational Requirements Document and meeting minutes such as the Human Systems Integration / Information Process Team (HSI/IPT).

C. SUPPLEMENTARY INTERVIEWS

Six interviews were conducted via video teleconference between the Naval Postgraduate School and NAVSEA Headquarters at Crystal City, Virginia. Four individuals had direct ties to the DD-21 program office either through position or association as consultants. J. Robert Bost serves as the Manning and Human System Integration Department Head in the DD-21 program office. Rich Robbins, Ross Barker and Al Rouse are consultants for DD-21 with special focus on manning, human performance and personnel policies. The remaining two individuals were associated with DD-21 through the office of the CNO and Director of Surface Warfare (N86). LCDR Tom Conlon serves in the Human Integration section of the Acquisition Branch of Total Force Manpower (N12). Greg Maxwell is a consultant for N86 in the DD-21 planning office. All of the consultants interviewed are retired Surface Warfare Officers.

The individuals were selected according to their position within the program hierarchy, their role in the development and implementation of optimized manning and a resistance management plan and their availability. The interviews were conducted in thirty-minute sessions, videotaped and later transcribed and analyzed for major themes. The DD-21 personnel were interviewed one-on-one, and the N86 personnel were interviewed together. The interviewees were provided a copy of the questions (Appendices C and D) prior to the interview session in order to allow them an opportunity to gather pertinent information and notes.

D. INTERVIEW QUESTIONS

The interview questions were designed to elicit answers to the following research questions:

1. Who are the stakeholders in optimized manning and what role will they play in successful implementation?
2. What are the expected major sources of resistance?
3. What are the major facilitators for successful implementation of optimized manning?
4. What are the specific plans for developing acceptance of optimized manning among the stakeholders?
5. What are the relationships between DD-21 and the overall set of changes affecting the Surface Fleet?

V. FINDINGS

This thesis has attempted to derive, from various sources, the answers to five general questions regarding the process for building acceptance of the optimized manning concept proposed for DD-21. In order to allow for a comparison between change management theory and the resistance management plan suggested by the answers to those questions, a data set containing briefing minutes, symposia transcriptions and semi-structured interview responses was compiled. The following pages present the data that corresponds to each of the research questions extracted from those various data sources.

A. MAJOR STAKEHOLDERS IN OPTIMIZED MANNING

1. BUPERS, NAVMAC and CNET

Figure 5.1 illustrates the list of major stakeholders present in the data. A member of the DD-21 program office identified The Bureau of Naval Personnel (BUPERS), the Chief of Naval Education and Training (CNET) and the Navy Manpower Analysis Center (NAVMAC) as three of his major stakeholders. Their respective interest in the manning structure of DD-21 is defined by their role in the Navy's manpower acquisition, development and distribution processes. More important to the success of optimized manning, in the opinion of this DD-21 officer, is the resident expertise in each of these commands that will help develop new methods for developing and managing a smaller cadre of sailors for a new Surface Fleet.

2. Surface Warfare Officer Leadership

That same DD-21 officer states that flag-level officers within the Surface Warfare Community must lead a change in the traditionally risk averse mindset of the Surface Fleet. He believes a reluctance to fail will be a serious obstacle to developing new operating methods in support of a small crew, but that it can be overcome through strong messages from leadership that innovation will demand a reasonable amount of risk.

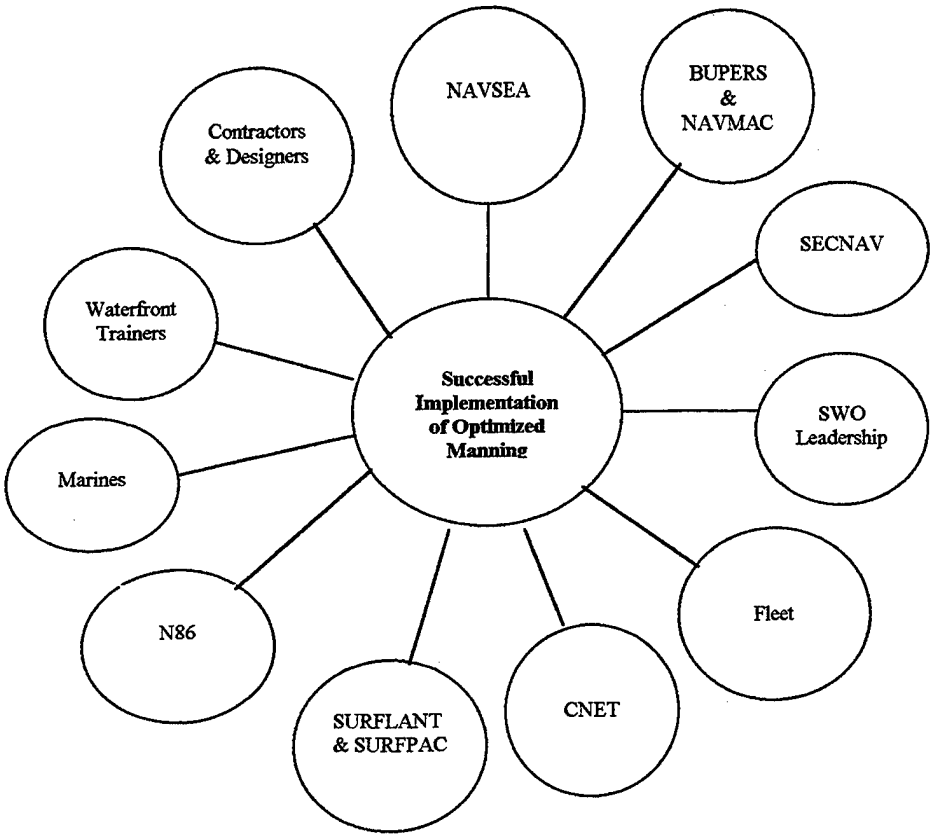


Fig. 5.1 Stakeholder Map for Optimized Manning

Paraphrasing former CNO ADM. Boorda's belief that if a person does not fail sometimes, then they are not trying hard enough, this subject states that the Navy can

learn to accept reasonable failures in the name of innovation and learn from them. He cites an incident on Smart Ship, where a human error caused a computer shut down that, in turn, left the vessel dead in the water. The wrong thing to do, in his opinion, would have been to hold the erring sailor up for discipline because the error was not malicious, and no one was put in danger. Disciplinary action would have sent the wrong signal to the very people on whom the success of the Smart Ship program depended for critical evaluation and imaginative solutions. Furthermore, this person believes that if CAPT Rushton, former Commanding Officer of YORKTOWN, had not been promoted following his tour on Smart Ship, it would have been a death knell for the program. The leadership of his community rewarded CAPT Rushton for the risk he took in accepting command of Smart Ship, and their action serves as a very powerful example to the rest of the Surface Navy.

3. SURFLANT/SURFPAC and N86

A member of the CNO's manpower office identifies a group he calls "warfighters" that have to be considered and satisfied in order for optimized manning to be successful. These warfighters include N86, the Commanders Surface Fleet Atlantic and Surface Fleet Pacific, and the regional Commanders in Chief who, he believes will be the ultimate operational customers of these new ships. He explains that they are vitally interested in the ability of a large ship with a small crew to carry out their assigned mission day after day, month after month. They will want answers to questions about endurance and the capacity to absorb damage and still remain on station.

This interviewee believes that the concept of optimized manning is valuable if it saves the Navy money. However, he warns that the reason we build and send ships to sea is to put ordinance on target and that the warfighters will not buy DD-21 or optimized manning if they don't believe it can deliver combat capability.

4. Waterfront Training Community

A consultant for DD-21 includes the waterfront training community, such as ATG and other schoolhouse instructors ashore, on his list of important stakeholders. He explains that, in the past, these have been the people with their checklists and strict operating guidelines that have had a very skeptical reaction to technology. He claims the training community has typically eliminated shipboard automated systems by injecting battle-damage during evaluations, and then forcing the crew to revert to manual operation of ship's systems without regard for the true capabilities of the technology.

He believes that the training community can begin to change its "checklist culture" if they are given adequate incentive, and the move away from checklists is made a high-priority by their leadership. In contrast to requiring an inflexible compliance with step-by-step procedures, training and evaluation personnel should be allowed to educate Fleet Operators in methods for risk-assessment and risk-acceptance. He admits that this is a difficult objective for people who have grown up with volumes of procedures, but this type of change will ultimately produce the new operating guidelines that will enable optimized manning to succeed.

5. The Fleet

All of the individuals interviewed indicated that it is the Fleet sailor who is the ultimate stakeholder in DD-21 and its optimized crew structure, because it is he or she who will have to do the maintenance, do the training, operate the consoles, clean the decks and make the whole concept work. The general opinion of those interviewed is that somewhere along the line, the sailors will have to come to believe in it too.

6. Marines

In the opinion of a program consultant, the leadership of the Marine Corps also has a stake in the design and definition of DD-21's capabilities because their Marines will be a major customer for those capabilities. He claims that even though the ship will not carry Marines, the land attack mission is in direct support of the Marine ashore and that they are deeply interested in ability of this new Destroyer.

7. Contractors and Designers

A program officer thinks that the designers and contractors must also be included in any list of stakeholders. He states that they are particularly important because they have been given a greatly expanded role in the development of DD-21 and optimized manning. In his opinion, they are vitally interested in optimized manning because successful design and implementation of the manning concept will lead to, and support a successful ship design that will, in turn, lead to a profitable shipbuilding contract.

8. Summary

The list of stakeholders presented here is not intended to be exhaustive. It is a synthesis of the opinions of members of the DD-21 organization, and it indicates who

those members believe to be vital to their efforts to implement optimized manning. Some of the stakeholders named, such as the Fleet sailor, may be more obvious than others, such as the Marine Corps. Additionally, two other organizations that were not named should be included. They are the civilian leaders in SECNAV's staff, and the DD-21 organization within NAVSEA. Neither was specifically mentioned in the data as a stakeholder, but they clearly have a vital interest in the successful implementation of optimized manning.

B. EXPECTED SOURCES OF RESISTANCE

1. Cost of Automation and Technology

One contractor for DD-21 believes that many members of the Surface Navy will resist implementing optimized manning because they will perceive the costs of the automation and technology as being too high to be justified. He states that no one can say yet where industry will discover and propose tradeoffs between technology cost and manpower costs for this ship and consequently, there is a lot of uncertainty about the final size and structure of both the DD-21 crew and its supporting infrastructure. In his opinion, such uncertainty nearly always causes reluctance and fear, and those reactions within the Fleet will slow implementation.

2. Navy Culture

Another consultant working to develop optimized manning thinks that the Navy's culture does not favor unmanned spaces and consoles. His opinion that the Navy tends to be very wary of automated controls was lent support by a Midshipman briefing at the Naval Academy where nearly fifty percent of the questions referred to redundancy and

manual backups for the automated systems proposed for DD-21 (PMS500M, 27OCT98). Interestingly, this interview subject says that people rarely question the ability of a single fighter pilot to utilize immense automation including "fly-by-wire" controls to fly a complex route at night and simultaneously drop bombs or fire missiles.

From the Fleet, a DD-21 program officer foresees two cultural issues that will contribute to resistance. First, he explains that people in the Fleet have very deep-rooted traditions and heroes. The image of Arliegh Burke on the bridge of his destroyer with twenty sailors and officers around him fits the mental picture of Naval Warfare. The thought of automating the most basic elements of the surface warship, such as the ship's wheel, is at sharp odds with Fleet's self-image.

The second expected cause for concern in the Fleet is damage control, which this interview respondent calls a very emotional issue. When someone starts talking about cutting crew size, he states that folks start getting very worked up about the ability to fight fires and flooding. They want to know where the goal of ninety-five came from and exclaim that they can't do their work now with four hundred people, how will they do it with only ninety-five and with probably more requirements?

A different consultant uses the term "well reasoned skepticism" when discussing cultural resistance to the DD-21 manning proposals. By that he refers to a reaction based on experience. He explains that people have seen the Navy design ships with certain manpower requirements and then not provide adequate funding to "buy" those billets. A given task will have been designed for certain number of sailors to perform, but the

specific funding for that task will only pay for eighty to ninety percent of those sailors to actually be onboard.

This interviewee also believes that people in the Fleet have experienced past manning reduction efforts and remember that billets were often cut, but the system requirements for operators and maintainers did not change by the same amount. This situation creates undermanned crews, and he claims that these two problems have caused the Fleet to become very skeptical where manning cuts are concerned. He points out that the Navy, as a matter of policy, currently mans its ships at eighty to ninety percent of wartime requirements, however, manpower shortages often prevent even that commitment from being met. With DD-21, he states that the Navy is going to have to man to one hundred percent of requirements, and that people are understandably skeptical that this will be accomplished.

3. Legacy Systems

A third cause of resistance is what another consultant calls "legacy systems." Legacy systems are pieces of equipment, such as engines, sonars or deck guns, that will not be new to DD-21, but may be systems that already exist and were probably designed for and outfitted on earlier ships. He claims that such systems, if they are included in a new ship, commonly experience integration problems and, in the case of DD-21, will have been designed for a different manning and operating philosophy. If not incorporated correctly, such systems can cause pressures for increased manning and resistance to new operating procedures.

4. Designers and Sponsors

A program officer predicts there may be resistance from designers who have historically not had to consider the human element early in the design of a naval vessel. Up until now, they have designed the hull and hardware to meet the mission requirements, and then fit in the people as the design required and/or allowed. With DD-21, he explains, they will have to adjust their entire design philosophy to the total ownership cost concept and justify every sailor onboard DD-21 from the beginning of the design effort.

He also expects to find some resistance within the sponsor at N86 because they will have to change the way they test and evaluate a ship. Citing past methods, this interview respondent explains that before DD-21, the approach to system design and acquisition was to "stovepipe" the ship piecemeal. Now, the platform sponsor will have to adjust to a total system design, testing and acceptance concept. The individual parts such as radars and engines may be rolled out independently, but they will be designed as integral elements of the whole system and their individual success or failure will depend upon the success or failure of the whole system. In both of these cases, this respondent believed that creating a new way of doing things would serve as a clear source of apprehension and resistance.

5. Tendency to Oversell a Program

Lastly, a consultant claims that the Navy tends to "oversell" new programs. He says that the Navy has to be careful not to tell people that they are building a $10 billion ship for only $1 billion. Exaggerated claims of cost savings and capabilities will be hard to fill and, if not met, they will provide ammunition to those who doubt the entire concept of optimized manning.

An interviewee summarized these potential sources of resistance. He stated that people are reluctant to change unless they have a reason to change, and he has listed six mindset roadblocks that specifically work against automation technology. They are: (1) it needs manual backup, (2) it needs increased maintenance, (3) it should be avoided because operator tasks become tedious, (4) digital automation is unsuitable for the naval environment, (5) fewer people will lead to a reduced damage control capability, and (6) it is too expensive. These six roadblocks do not include every possible source of resistance but they do paint a picture of the anticipated reasons people have for believing that an innovation will not work.

C. FACILITATORS FOR IMPLEMENTATION OF OPTIMIZED MANNING

1. Emphasize Human Factors in Design Process

Two members of the DD-21 program office have stated that, from a high-level perspective, the inclusion of human operators in the system design process is a critical factor for the success of optimized manning. They believe that, in the past, the Navy has failed to fully address the role of the human, and the requirements for workload sharing between human and machine until after the machine had already taken form. As a consequence, they both contend that these systems were not designed to support reduced manning.

In contrast to past reduced manning programs, two interview respondents claim that the design effort for DD-21 is different from nearly everything that has been done before. They state that it is a top-down industry driven process that will consider the role of

human interaction with the ship's technology from the very start. For this ship, manpower and its costs have moved from an afterthought position to the forefront where their design and consideration are integral the success of the entire program. Another interviewee states that if Surface Warfare does this right from the start and includes human beings in the design process, that they will make the lives of DD-21's officers and crew much easier, while at the same time meeting cost and performance objectives.

2. Senior SWO and Civilian Leadership Lead the Change Effort

A DD-21 consultant believes that the success of optimized manning depends heavily on senior Surface Officers leading a change in the mindset that people are a relatively cheap solution to problems. He claims that the idea of sailors being inexpensive has allowed past design efforts to cling to manpower intensive options. But, in the case of DD-21, he believes the Navy no longer has that luxury. One reason, he cites, is that national demographics will no longer support the manning levels required by design methods of the past and the Surface Fleet can no longer afford to maintain its current manpower requirements. A robust economy full of career options and a shrinking pool of seventeen to twenty-one year olds are a reality that must be dealt with. This consultant states that the fiscal opportunity cost of manning is prohibitive right now and the Navy spends too much money on manpower if it is going to make investments in new technology and equipment.

A retired member of the N86 staff also believes that the success of optimized manning depends on the reaction of Surface Navy leaders to environmental pressures. He states that there are several factors in today's changing environment that require examination,

including budget and personnel shortages, antiquated operating and manning methods and a general lack of a monetary cushion for unforeseen contingencies. He claims that such examination is ongoing in the form of the CNO's Inter-Deployment Training Cycle reductions, the pay and retirement debate before Congress and optimized manning itself. He believes that senior officers have acknowledged the real danger that the Surface Navy could be weakened in the future without some major changes now.

Another retired officer, now consultant, agrees that leadership is critical for implementation and he claims that the Secretary of the Navy is fully behind the effort to revolutionize the design and acquisition of warships beginning with the DD-21 program. He says the CNO is also heavily committed to the optimized manning concept in company with the Director of Surface Warfare (N86) who established the original manning target of ninety-five. All of the interview respondents concur with the need for high-level involvement, stating that the active participation and full backing of senior civilian and naval leadership is vital to the success of any significant manning reduction effort.

3. Redesign Personnel and Training Infrastructure

One interviewee also named a redesigned Navy personnel and training infrastructure as a critical requirement for successful implementation of optimized manning. He believes that a new system must be designed that can adequately plan for and support the requirements of DD-21's crew structure while at the same time support existing manpower requirements as long as they last. He points out that, for a time, there will in effect be two Fleets operating side by side that must be able to function and be supported as one.

4. Design Maintenance, Reliability and Interoperability Up-Front

Finally, two of the individuals interviewed stated that there must be a revolutionary change in maintenance, reliability and total system interoperability. Damage control, periodic maintenance, corrosion control and overall system reliability must, they say, be designed into the total system up-front in order to enable significant changes in the way the Navy mans its ships. Remote sensing, automation, new protective coatings and space age materials are part of the answer. The rest of the answer must be found if the goal of ninety-five or anything near it is going to become a reality

They state further that the design of ship's systems has traditionally tended to consist of separate "stovepipe" projects that often lacked compatibility with either new or existing systems. These characteristics of traditional system development have severely hampered past efforts to reduce crew size onboard Navy ships and changes will aid the development of an optimized crew.

D. PLANS FOR DEVELOPING ACCEPTANCE OF OPTIMIZED MANNING

1. Not Complete, but Underway

During his interview, a former member of the N86 staff stated that, as far as he knows, a rational system or process for the mitigation of resistance to the optimized manning concept does not yet exist. He says a plan is being developed by the program office that will address resistance to optimized manning, and that it will be more formal than anything that now exists. A DD-21 program officer also says that there is no plan yet for building acceptance for optimized manning. However, he claims that he and another member of

the program office have one in mind that will reduce skepticism by using a series of tests and demonstrations to prove that optimized manning can work. He believes that this kind of plan will reduce apprehension within the Fleet operators because it will reduce the perceived risk associated with the proposals for reduced crew sizes.

2. Prototypes, Demonstrations and Simulations

The plan proposed by two individuals from the DD-21 program office includes prototyping, modeling, test programs, simulation of different functions, and some demonstrations both at sea and ashore. The exact definition of their plan will depend on the recommendations of industry regarding which aspects of DD-21 are best simulated vice being modeled or demonstrated. They explain that industry is conducting the feasibility research in support of optimized manning, and that it is just too early for the program office to know what their recommendations will be. They do believe that there are ways of reducing the perceived risk of reduced manpower, such as at-sea demonstration of engineering control or simulation of new console technology that will then reduce the associated fear and skepticism. These two interviewees say that they intend to include as many modeling and demonstration elements as possible in the implementation plan.

3. HSI/IPT

Another interview respondent states that the current absence of a smooth process plan does not mean that there are not efforts already underway aimed at building acceptance of DD-21. He explains that there are several initiatives ongoing with that very goal. NAVSEA PMS-500, the DD-21 program office, is sponsoring a Manning / Human

Systems Integration Information Process Team (HSI/IPT) to work on the issue of building acceptance for optimized manning. This group consists of seventy to one hundred members of the various stakeholder groups including CNET, BUPERS, N86, NAVMAC, the U. S. Coast Guard, and Military Sealift Command (MSC). They are divided into three functional areas: policy, personnel management and training. According to the IPT charter, one of the goals is the identification of design requirements, technological innovations and organizational changes that will enable the DD-21 program to meet its manning goals and develop acceptance of optimized manning (PMS500M, 1998).

4. Issues Delineation

According to a consultant for N86, the process for building acceptance, however undefined, is indeed underway. He states that the Surface Warfare Director's office is driving an effort to get top SWO leaders together to discuss the operational and cultural issues that will be affected by the changes proposed for DD-21. He says that with the active cooperation of ADM. Mullen (N86), there has already been a meeting of Surface Admirals attempting to identify important topics related to optimized manning in order to facilitate further discussion on how any proposed changes could be accomplished. The first such meeting took place in late 1998 with five one-star Admirals debating which operating principles and traditions should be examined and possibly changed in support of optimized manning. These issues included acceptable risk, command relationships, operational philosophy, personnel rotation and Surface Warfare Officer community management. This interviewee stated that follow-on meetings will be scheduled as the

need arises in the opinion of NAVSEA and/or N86, and that such meetings can be recommended by industry consultants.

5. Education

In addition to these meetings, all of the individuals interviewed stated that there is an ongoing education process being initiated by the DD-21 hierarchy, both program officers and consultants, that utilizes briefings, symposia, journals and messages that are designed to get accurate information out to both civilian and military leaders of the Surface Community. Two of the interviewees explained that there is also an ongoing self-education process in which flag officers at Navy Headquarters and in commands deeply interested in DD-21, such as SURFLANT and SURFPAC, are contacting members of the DD-21 office seeking information on optimized manning. One consultant believes that these efforts to find answers to questions about DD-21 shows that the Surface Warfare Community as a whole is developing a willingness to talk about and accept some very dramatic changes in the way they have thought about and done their business.

Another consultant believes there is a critical need to identify and utilize credible people in the education process. He thinks that these would be people who know the audience, and are known by them as reliable experts, so they will be working from a position of respect and trust. An example of such a person would be a Warrant or Chief Petty Officer with a breadth of at-sea experience. They should, in his opinion, have a very good idea of what that audience will be thinking so they can anticipate questions and concerns. These educators will have to be credible with the audience on any particular

topic under examination because they will have to convince them that the Navy is not going to repeat the mistakes of the past.

6. Waterfront Information Process Team

A member of the CNO manpower office believes that the opinions, concerns and skepticism of the Fleet operating core are hard to measure because, he says, that these individuals are busy with their day-to-day duties. He proposes setting up a "waterfront IPT" with various groups from the waterfront community including SURFLANT and SURFPAC, ATG, Squadron officers and a number of ship's captains to examine questions and concerns, take recommendations and begin the process of building acceptance of the optimized manning concept. This IPT would utilize Fleet input conferences, Surface Warfare Commanders Conferences, presentations to the Naval Academy, Naval Postgraduate School and the Surface Warfare Officer School as educational and feedback opportunities to begin addressing concerns and building acceptance with the Fleet operators.

7. Plan Of Action and Milestones (POAM)

With regard to the existence of a formal plan for building acceptance of optimized manning, a consultant in the PMS-500M personnel working-group states his group is developing a Plan Of Action and Milestones (POAM) for the DD-21 program office, but adds that the details are not yet available. However, he explains that to deal effectively with resistance, the effort will require four elements: a formal plan, candid discussion with the Fleet, a recognition and willingness to learn from past mistakes and the process must engage credible people in the eyes of the Fleet operators.

A consultant in the policy development working-group States that a process for building acceptance must also include the element of continuous communication and engagement with critical stakeholders. He points to what he sees as a frequently overlooked problem with regard to DD-21 and its largely military stakeholder base. That problem, in his opinion, stems from the fact that military personnel currently engaged with designers and planners usually transfer every two years, and therefore will not be there when the ship begins construction or first puts to sea. This situation leads to a lack of long-term stability of opinion concerning optimized manning in any particular office and is compounded by the fact that there are very few civilians in some offices that are critical to the effort to address resistance. Consequently, he believes, the effort to institutionalize optimized manning and the new operating concepts that will accompany it must be a continuous process of engagement and interaction to develop long-term commitment until the ship is operating at sea.

8. Timeline

Finally, A DD-21 program officer, in his interview, laid out a brief timeline for the full acceptance of optimized manning. He believes that it will take a generation, some twenty years, to affect the cultural changes necessary to build full acceptance. He explains that when the Navy went from sails to steam engines, there was a transition period that saw the use of both systems until steam had proven its reliability, and, that the transition continued until those officers who had served a long time under sail had retired from the service. He says Smart Ship was the triggering event that started this twenty-year clock. Furthermore, he thinks that it will take three to five years of hard work to get enough key stakeholders

to accept the idea of a small crew handling a large ship, and to then help design and implement an optimized crew for DD-21.

E. DD-21 IN THE CONTEXT OF OTHER CHANGES AFFECTING THE SURFACE FLEET

1. Smart Ship

When asked about the relevance of Smart Ship to DD-21, a member of the DD-21 office said that he does not believe the experience and example of Smart Ship have yet been totally embraced by the Navy. He cites editorial journal articles and negative reactions at Smart Ship briefings as evidence that there is still skepticism regarding the ability of YORKTOWN to serve in a front-line capacity. He thinks that there are important lessons to be learned from the implementation of Smart Ship technology, and the accompanying effort to build acceptance of it.

In the opinion of this interviewee, the reductions on YORKTOWN, amounting to a ten to eleven percent reduction in crew size, were minor when compared to the sixty to seventy-five percent reductions proposed for DD-21. This person believes the challenge for N86 and NAVSEA is to take the Smart Ship success and use it address the resistance to optimized manning. In view of that need, the HSI/IPT has been instructed to design and conduct proof of concept demonstrations for reduced manning technology and to provide for early operational testing by applying lessons learned from Smart Ship, Smart Base, Arsenal Ship, and "experienced warfighters" (PMS500M, 1998).

2. Evolutionary Steps

One department head in the DD-21 program expressed disappointment at the cancellation of Arsenal Ship because, he believed, that program would have provided an opportunity to demonstrate at sea, many of the technologies and procedures that will be required for DD-21. He states that Smart Ship, Arsenal Ship and DC-ARM can be used to make the leap to DD-21 less dramatic. These programs can, in his opinion, provide the basis for an incremental change process that would create less resistance than a single, more radical change.

A consultant for DD-21 agrees that the current set of change initiatives will serve as stepping stones that help demonstrate to the Fleet that the concept of optimized manning is achievable. The success of these programs, he says, helps build confidence and reduce fear and uncertainty. Two other interview respondents say that neither DD-21 nor Smart Ship can be looked at in isolation. They claim that these programs represent the beginning of a series of changes that are coming to the Surface Fleet in the next ten to fifteen years.

Regarding the relationship between DD-21 and the other changes, they say that a failure of Smart Ship or DC-ARM does not necessarily promise a failure of DD-21, but that such setbacks would make the job of designing and implementing it much harder. They believe that if Smart Ship or some other manpower reduction initiative is a success, it only enhances the efforts of the program office to get people to accept optimized manning.

A consultant in the policy working-group claims that the relationship between the programs is stronger than one that merely provides feedback. He believes that if Smart

Ship, DC-ARM and the other initiatives aimed at reducing manpower fail, then that failure will produce a tremendous mindset obstacle within the Fleet operating core, and there will be no point in going after the DD-21 reductions. He also sees these other programs as evolutionary steps that are needed to accomplish the revolutionary reductions embodied in DD-21. He states however, that if they fail, then the Navy may as well forget reaching for the more revolutionary changes of optimized manning.

3. Operating Philosophy Changes

A retired Surface Warfare Captain believes that the three programs, Smart Ship, DC-ARM and changes to the IDTC, represent the current state of the Navy: fewer people, fewer ships and fewer dollars. He thinks that it will be hard to convince officers and sailors who grew up in the Reagan years with plenty of money, weapons, personnel and training opportunities that the Fleet can maintain readiness with fewer of all these things. To him, the challenge for leadership will be to get these officers and sailors, who are used to having plenty of nearly every resource, use to operating in austere times while still meeting their mission requirements. These manning reduction programs complement DD-21 very well and will, in his opinion, challenge the Fleet sailor to find innovative solutions to problems that had traditionally been overcome with manpower.

When asked about the importance of the success of these programs however, this consultant has a very different point of view from the others. He thinks the presence of these programs is more important than their rate of success. The fact that they are out there, he believes, tells folks that the Navy is attempting to find a different way of doing

business and this knowledge will drive the search for fresh ideas and help the effort to build acceptance of DD-21.

4. Summary

In summary, the majority opinion among the individuals interviewed is that Smart Ship and the other changes underway in the Surface Community will provide valuable lessons for the design and implementation of optimized manning. All of these initiatives can be seen as incremental steps in a greater change process that includes DD-21 and is leading to a Surface Navy that is leaner in terms of manpower and more technically efficient. The interview respondents do not agree about the effects of a failure in any one program on DD-21, but they do agree that the group of changes represents a change in mindset about manpower philosophy.

F. CHANGE LEADER CONSIDERATIONS

In addition to the five research questions, the interview subjects were asked to provide their opinions regarding the choice of a change leader for optimized manning. One program officer said that the DD-21 planning process is still in the very early stages, and that the position of change manager has not yet been defined. With regard to the POAM being developed, however, he states that such a plan will go from the manning department office to the program director for approval and probably then back to the manning department for implementation, in concert with the other DD-21 department heads.

In contrast, three of the consultants interviewed said that the platform sponsor at N86 should have the critical role in implementing the entire DD-21 program. They do not

think that the program office or any contractor can fill the role of change leader because the Director of Surface Warfare (N86) is the center of gravity of the entire Surface Warfare community, and must therefore drive the commitment for the concept of optimized manning.

With yet another viewpoint, a single consultant states that the acquisition community, or possibly even industry should be in charge of any implementation plan. The latter preference is due to the fact that industry is leading the total project design effort and is therefore in the position of making most of the recommendations. Industry is, in his opinion, in a natural leadership position due to the fact that the Navy will only buy DD-21 if industry can prove that it works. In this individual's view, industry will be working in their own best interests by insuring that resistance and skepticism are adequately dealt with.

G. SUMMARY

This Chapter summarized the data findings corresponding to the five research questions. A stakeholder map was created that includes various members of the Navy military and civilian chains of authority, DD-21 contractors, designers and sponsors, Marine Corps leaders and Fleet operators. Some potential sources of resistance and skepticism, such as cost, culture and legacy systems, were identified, as were some facilitators of optimized manning implementation. The interviewees all agreed that senior Surface Warfare Officers must take a leading role in any effort to change the operating philosophy of the Surface Fleet. There was also general agreement that the design process

for DD-21 must be driven by criteria of reduced manning, and must also address maintainability and reliability at the very beginning.

Plans for the implementation of optimized manning are not yet complete, but are in development within the DD-21 program office. When complete, that plan should, in the opinion of the interview respondents, include simulation, modeling and demonstration elements. The designers of the plan intend to include lessons learned from Smart Ship, DC-ARM and other manpower initiatives underway in the Navy. Finally, the need for a change leader who will be responsible for coordinating the efforts to build acceptance of optimized manning is acknowledged; though there is no agreement on where that leadership rests. The next Chapter contains a comparison of the data with change management theory. It also contains some recommendations for the implementation of optimized manning as well as suggested further studies.

VI. ANALYSIS AND RECOMMENDATIONS

This final Chapter analyzes the data in terms of change management theory described in Chapter III. The purpose of comparing findings from this exploratory study to theory is to assist DD-21 planners in developing a formal resistance management plan specifically targeted at building acceptance of optimized manning. In summary, this Chapter draws conclusions based on the study, makes recommendations to assist planners and contains suggestions for further research.

A. DATA ANALYSIS

1. Need for Change

The change management models discussed in Chapter III provide a framework for the development of a coordinated resistance management plan. According to Walton (1987), one of the elements related to an organization's ability to innovate is its guiding model or vision for the future state. In the data, there are statements by members of the Navy's leadership regarding the future direction of Surface Warfare and its manning strategy. The CNO, N86 and members of NAVSEA have clearly stated an intention to dramatically reduce shipboard manpower, based on the need to reduce life-cycle costs, and the opportunity afforded by automation technology to accomplish the Surface Fleet's mission with fewer sailors at sea.

With regard to determining the need for change, Beckhard and Harris (1987) state that an organization's executives must determine how much control they have over the

conditions that drive a change movement. The DD-21 Operational Requirements Document (ORD) indicates senior Surface Navy leaders believe economic necessity and the need to reduce ship life-cycle costs has limited their choice about whether or not to change the Navy's manpower philosophy. They seem convinced that current manning processes are unaffordable and present DD-21 as the next step toward a future Fleet of combatants operated by crews whose size and composition have been optimized for the requirements of cost and mission. While the final form of this vision may not yet be defined, the fact that the future will be a radical departure from the past seems unquestionable.

According to Beckhard and Harris (1987), Navy leaders must determine both how to manage a change and whether or not to initiate that change in the first place. Communicating the answers to those questions to the organization's operators and other stakeholders is another key step in the innovative process. Successful implementation depends on the operators and implementers throughout the organization appreciating the need for change and having a clear understanding of the proposed future state. Misunderstanding and lack of commitment in these areas contributes to fear and resistance.

2. Change Leader

Tichy and Devanna (1990) define the transformational leader as someone who leads the effort to define the need for change, create new visions, mobilize commitment to the innovation and ultimately transform the organization. Ansoff and McDonnell (1990) describe four management archetypes, planner, entrepreneur, leader and administrator,

that are required for the successful planning and implementation of change. The planning and entrepreneur roles are analytical, methodical and future oriented, and they are important for the definition of the need to change and the future state. However, the entrepreneur seeks a new line of business opportunities where the planner only seeks to improve within the current set of business goals. The leader role is critical to implementation and demands the ability to judge character and potential, communicate and motivate in order to identify allies and enemies of a change and develop commitment among the stakeholders. The administrator has the controlling tasks of tracking progress, identifying potential trouble spots and developing corrective action to allow the implementation process to continue. The last two roles can be termed the change leader and the change manager respectively, and according to Beckhard and Harris (1987), these roles may or may not be vested within the same person or position depending on the complexity of the innovation, and the abilities of the individual.

Several of the interview respondents indicated that the process for the development and implementation of optimized manning does not yet have such a manager/leader. When asked to identify a potential change leadership position within the program hierarchy, the interviewees expressed widely varying opinions. Those opinions ranged from the manning department head of the DD-21 program to an unidentified position within the N86 hierarchy to an equally unidentified position among the DD-21 industry contractors.

Furthermore, there was no sense among the interviewees of a near term requirement for a leader and many stated that a change leader and/or manager would be needed at

some time during the change process, but none indicated that such a billet needed filling now. With regard to the change manager roles defined by Ansoff and McDonnell (1990), the DD-21 program officer claimed during his interview that many of those tasks such as identifying trouble spots and developing corrective action were being carried out by the four manning department working groups. However, he also said that no specific manager for these efforts, with authority beyond the working groups themselves, has been officially designated. None of the interviewees described a leadership or management role that fits the entrepreneur archetype. A consultant for N86 stated that the challenge for DD-21 planners is to develop new and efficient ways to meet the Navy's traditional requirement of hitting a target with ordinance. Such a role fits Ansoff and McDonnell's (1990) definition of planner vice entrepreneur.

Clearly, DD-21 and optimized manning are still in the early design phase, and have only begun to take steps into the transition phase. With regard to the selection of a change leader, a member of the program office says that the process has not yet gotten that far. However, the successful transition process described by Beckhard and Harris (1987) requires a leader/manager who has clout, respect and interpersonal skills for dealing with the organization's internal and external stakeholders. Because DD-21 has no transition leader or manager, there is no one playing the roles described in the literature. Based on the comments of the interviewees, there does not appear to be a central monitor of the various on-going manning initiatives. There is no single change management position within the hierarchy of DD-21 looking for valuable lessons to be applied to the program, nor a single clearinghouse of opinion and feedback from the stakeholders. Nor

is there a single change leadership position coordinating an overarching effort to develop understanding and acceptance of optimized manning among the stakeholders. Manning department working groups and the HSI/IPT are carrying out some change leadership and/or management roles, such as trouble identification and corrective action definition. However, these DD-21 program elements do not appear to meet the requirements of clout, respect and communication skills of a change leader, nor the change manager requirements for insightful decision-making and control called for by Beckhard and Harris (1987) and Ansoff and McDonnell (1990).

3. Stakeholder Assessment

Ansoff and McDonnell (1990) state that identification of key stakeholders who will either support or resist an innovation is a critical part of managing the change process. Each of the interview subjects defined a set of individuals and/or groups as stakeholders of optimized manning, however, the makeup and range of the stakeholder sets seem to vary with the background of the person defining the set. For example, a DD-21 program officer included BUPERS, NAVMAC and CNET in his list of major stakeholders, but an active-duty member of the CNO's manpower office listed operational level commanders such as SURFLANT, SURFPAC, and regional commanders in chief, while a consultant included the Marine Corps. This diversity in the lists of stakeholders is important and it reinforces the importance of having breadth and variety among the participants in the implementation planning process. All of the stakeholders identified should be acknowledged and their respective interests and concerns reflected in specific planning and implementation modules.

The stakeholders identified by the various data can be generally described as internal or external relative to the DD-21 program office at NAVSEA. Internal stakeholders include Fleet sailors afloat, the waterfront training and inspecting organizations, maintenance organizations ashore, Surface Warfare Officers, N86 and operational commanders, and the Navy personnel management organization. External stakeholders include contractors, designers, and civilian leaders such as SECNAV and Congress.

The data, however, do not indicate that there has been a systematic process for stakeholder identification or validation as suggested by Beckhard and Harris (1987). They recommend that, in addition to "intuitive political judgement," an analysis of the organization and its environment be conducted to determine which subsystems, individuals and groups must be committed to the change effort for it to succeed. The stakeholders listed in the data do not appear to be the product of such an analysis.

4. Critical Mass

In addition to identifying critical stakeholders, Beckhard and Harris (1987) recommend that change managers determine the critical mass within each stakeholder group that is needed for the successful implementation of an innovation. They admit, however, that it may be impossible to quantify in exact figures, the number of people required for successful implementation, and that a study of the interests and influence of each stakeholder may define its critical mass. With regard to optimized manning, the data do not show a process for defining and validating the critical mass of the stakeholders.

5. Behavioral Diagnosis

Building a launching platform for a change initiative is, according to Ansoff and McDonnell (1990), essential whenever a change is expected to encounter resistance. Platform construction begins with a series of diagnoses intended to determine first, the strategic problems that are creating a need for change, then, the potential for a given innovation to encounter resistance, and finally the severity of resistance and its likely sources. The last of these, the behavioral diagnosis, is intended to find out which parts of and organization will be affected by an innovation, which stakeholders will support the change, which will not and why.

Ansoff and McDonnell (1990) state that stakeholder groups are likely to resist a change if it threatens their power, violates their norms, is based on a need the group believes to be irrelevant or is based on a model of reality that is different from the group's reality. Tichy and Devanna (1990), state that resistance will occur when the change runs against a group's habit or inertia, causes a loss of predictability and a fear of the unknown or if the sunk costs of the current system are perceived to be lower that the costs of the new system. In each case, the authors provide a broad set of categories for possible sources of resistance, and recommend a systematic effort to define the applicable set of dissatisfiers in a given innovation effort.

In contrast to the analytical process for determining potential sources of resistance recommended by authors such as Ansoff and McDonnell (1990), the data obtained from the interviewees tends to be anecdotal with regard to the identification of specific sources and reasons for resistance. For example, a contractor working on human/system

integration believes the cost of automation will be an obstacle to the application of technology. Another consultant, who is a member of the NAVSEA PMS-500 personnel policy working group, thinks that the Navy has often over-sold new systems, and when the inflated expectations are not met, the stakeholders react negatively to any other proposed changes.

Like the sets of stakeholders, the sources of resistance seem to vary by individual perspective, with those people higher in the chain of authority having a broader and less detailed set of potential dissatisfiers. None of the individuals interviewed described a set of resistance sources the extended beyond their own background and expertise. A senior program officer may have a full appreciation for the habits and inertia of the Navy's command hierarchy, however, a failure to fully describe the likely fear of the unknown within the Fleet operators may indicate a weakness in the resistance diagnosis. Such a limitation suggests the need for a more systematic investigation of stakeholder interests, concerns and reactions to optimized manning in order to ensure their needs are being addressed.

While not systematically derived, the data do contain numerous expected sources of resistance. A consultant for the DD-21 office thinks that from within the Fleet, cultural issues such as wariness of unmanned spaces and unmanned control consoles may contribute to skepticism and resistance. A consultant for N86 believes the fear of potentially undermanned and ineffectual damage control parties is already provoking hostile reactions from many members of the operating core. A DD-21 program officer expects designers to resist a new process that requires the inclusion of humans as a Key

Performance Parameter. He also thinks that there may be some officers working with the platform sponsor who will be skeptical of a new systems design and evaluation method that is in sharp contrast to the traditional "stovepipe" approach. Skeptical comments made by a Naval Academy Midshipman who called optimized manning "a nice fairy tale" and Anthony DiGiorgio (1998) who warns of a cultural distrust of automation provide further indicators of possible resistance from both current and future Fleet operators.

Responses of the interviewees tend to fall in line with Tichy and Devanna's (1990) taxonomy of sources of resistance. A wariness of unmanned engineering spaces correlates with resistance to change that runs against a group's habits. Fear of potentially ineffectual damage-control organizations is a clear fear of the unknown, and resistance to the potentially high-cost of automation is closely related to the sunk-cost theory described earlier.

What the data do not show is a coordinated process for the identification and validation of the widely varied potential sources of resistance. The many causes of resistance that were identified in the data appear to be the product of the professional experience and observations of program officers and contractors. The breadth of the list of potential dissatisfiers appears to depend on the breadth of experience of the originator rather than a broadly categorized, systematic process of the type recommended by Ansoff and McDonnell (1990).

6. Activity Planning

Beckhard and Harris (1987) describe an activity plan as an element of the transition phase that specifies critical events leading to the successful implementation of an

innovation. The data do not contain any specific components of an activity plan, however, the individuals interviewed were asked to identify facilitators of successful implementation of optimized manning. While the interviewees may not have used the same terminology as Beckhard and Harris, their answers generally fit the definition of an activity plan, because they identify those events that are important to the success or failure of optimized manning.

The data indicate four predominant factors that can be classified as critical to the successful implementation of optimized manning: (1) leadership's reaction to the need for change, (2) a design process that integrates the human operator, (3) leadership involvement in change planning, and (4) a whole system concept for the future Fleet.

A majority of the interview respondents stated that senior leaders of the Surface Warfare Community must react decisively to the budget and personnel pressures that are defining the need to implement optimized manning in DD-21. Budget pressures are dictating a reduction in the number of officers and sailors the Navy can afford to put onboard a ship over its expected life. National demographics are dictating a reduction in the number of recruits that are available from the population, and therefore, a reduction in the total number of personnel available within the service. The interviewees stated that optimized manning depends heavily on a clear acknowledgement of these circumstances, and the resultant need for a new manning philosophy. The data indicate that the CNO, N86 and other senior leaders have indeed acknowledged both these pressures and the need to change.

According to the data, the second factor required for successful implementation of optimized manning is a design process for DD-21 systems that includes the human operator. The concept of optimized manning is, according to a DD-21 program officer, achievable only if industry analyzes and defines the appropriate roles of both humans and technology at the very start of the program. That program officer and others in the DD-21 office state that the DD-21 program is in fact including the human as a Key Performance Parameter in the systems design process, and that process will make possible the changes called for by the first factor.

The third factor identified in the data is the involvement of Navy leadership stakeholders, including N86, SURFLANT and SURFPAC, BUPERS, CNET and others, throughout the entire planning and implementation of optimized manning. These stakeholders possess expertise in areas such as sea/shore rotation planning and in-port duty section requirements that are critical to the development of a new manning philosophy. All of the individuals interviewed stated that the application of this expertise is a vital step in the process to develop and implement optimized manning.

The fourth facilitator is an inclusive factor that contains three elements combined to form a whole system concept to support optimized manning. This facilitator includes redesigned personnel acquisition, allocation and training systems, redefined ship maintenance and reliability concepts and a complete systems approach, vice a "stovepipe" approach to hardware/software development. Taken as a group, these elements form the basis for a whole system concept that links the ship's design with the design of its

supporting infrastructure. The data seem to indicate that this is the intent of the DD-21 organization.

Ansoff and McDonnell (1990) state that any effort to implement change must include plans to develop adequate capability to support the new organizational strategy as indicated in Figure 3.3. This planning/implementation process is intended to help institutionalize the change by ensuring the strategy is not enacted prior to there being adequate support infrastructure. In the case of optimized manning, such a failure might occur if the re-structured crew of DD-21 was introduced with a without adequate changes being made in the personnel assignment and training systems. The whole systems approach described by the interviewees appears to address this potential problem.

7. Commitment Planning

A commitment plan is a change management process devised to secure support and cooperation from the stakeholders who are most critical to the successful implementation of an innovation. The process described by Beckhard and Harris (1987) requires the development of a plan for gaining the commitment of the critical mass. They state that resistance to any change is normal, and is usually a fixed-bias or "frozen" attitude against a new method or innovation. They claim that a properly designed commitment plan will "unfreeze" the attitudes of the stakeholders by creating a situation that is neutral, so that no one is forced to commit their opinions before they have accepted the innovation.

One strategy for unfreezing attitudes presented by Beckhard and Harris (1987) is an education intervention. This intervention is intended to help people understand the details and implications of an innovation in order to reduce apprehension and build acceptance.

The data present a series of articles, briefings, symposia, and demonstrations that are aimed at education and information sharing between members of the DD-21 team and their stakeholders. The subjects also described manning Information Process Teams (IPT) and working groups, whose charters call for the discovery of methods for improving cooperation with, and the mitigation of resistance within the Fleet. Overall, these projects seem to represent the outline of a process for gaining input from Fleet operators regarding their concerns and innovative ideas, and to provide those operators with information on DD-21 and optimized manning.

Another commitment strategy described by Beckhard and Harris (1987) is role modeling. In such a strategy, the executives of an organization incorporate elements of an innovation into their own lives, and therefore prove to the stakeholders that they are themselves committed to success of the change. Smart Ship, DC-ARM and the IDTC workload reductions can be classified as elements of a role modeling strategy. By accepting the risks of more automation and fewer officers and sailors at sea in YORKTOWN and fighting fires in SHADWELL, leaders of the Surface Navy are demonstrating a commitment to a new manpower philosophy. By reducing the number of inspections and passing more responsibility for readiness to squadron commanders and ship captains, they are demonstrating an acceptance of the risk inherent in a new operating philosophy. According to Beckhard and Harris (1987), such actions prove to the operators and other stakeholders that the change activity is a priority for leadership, and it will usually, therefore, encounter less resistance.

These programs and their relationship with DD-21 may also enhance the rate of adoption of optimized manning by playing the part of the variables Everett Rogers (1995) describes as the "perceived attributes" of an innovation. These variables are: the relative advantage of the new system over the old, the compatibility of the new system with the current structures and culture of the organization, the complexity of the new system in relation to the structure of the organization and skills of its members, the trialability of the new system prior to implementation, and the observability of those trials to the organization's stakeholders. Smart Ship, DC-ARM and other manning innovations can fill the need for such variables in the effort to build acceptance of optimized manning by proving the legitimacy of automation technology and small crews in a naval organization. These projects are being conducted on Navy ships, by the Navy and consequently, they should validate the relevancy and compatibility of the DD-21 concept, assuming their trials are observed to be adequate by Fleet operators.

The data contain references to an ongoing effort within the DD-21 program office to produce a resistance management POAM. The details of that plan are not yet available because they are still preliminary, however, there are many potential elements within the DD-21 data for the creation of a commitment plan as described by Beckhard and Harris (1987).

8. Monitoring / Feedback System

The last element of the commitment plan described by Beckhard and Harris (1987) is a monitoring system to assess the progress of the effort to build acceptance and commitment. Such a system is intended to enable those in charge of the process to know

if their plans for mitigating resistance are successful. While there are a number of projects, both planned and underway, that are aimed at sharing information and collecting the ideas and concerns of the operating core, there does not yet appear to be a complete system for providing the continuous feedback recommended by Beckhard and Harris

The most obvious feedback elements contained in the data make use of briefings and conferences such as the Fleet input conference, the SWO Commanders Conference and briefings at the Naval Academy, Naval Postgraduate School and Surface Warfare Officers School. The interview respondents describe these events as avenues for innovative input from Fleet operators to the DD-21 office, and as a medium for the dissemination of details of optimized manning. However, these projects do not completely fit the requirement for a dedicated mechanism for the supply of continuing feedback between the planners and implementers of optimized manning and their various stakeholders as recommended by Beckhard and Harris (1987). Nor are they the mechanism described by Ansoff and McDonnell (1990) for monitoring and controlling the planing process to ensure the program modules have reached acceptance prior to their implementation.

In each case, the adhoc programs described by the interviewees lack the formal structure of a feedback system designed to promote thorough two-way communication in an organization the size and complexity of the U.S. Navy. As with the stakeholder analysis and resistance diagnosis, these efforts aimed at providing information to the Fleet and feedback to the DD-21 program appear to be based on intuition rather that a systematic process. Such a process should, according to Ansoff and McDonnell (1990),

determine what information is relevant to the success of DD-21, where that information can be found and where it will be needed.

9. Summary

The data set contains a variety of potential elements of a resistance management program. There are statements made by Navy leaders that acknowledge the need for change. There are lists of stakeholders in DD-21, and potential sources of resistance to optimized manning. There are projects in place, or being planned that could form the basic parts of a commitment plan and feedback system. However, none of these elements appear to have the analytical foundation recommended by the change management theory described in Chapter III. They instead, seem to be founded on the experience, observations and knowledge of the planners of DD-21 and optimized manning.

B. RECOMMENDATIONS FOR DD-21

This analysis of the DD-21 implementation plan is grounded on recognition that the effort to manage resistance to optimized manning is in the planning and early transition phases. It would be improper to assume that a critique of any resistance management plan developed at this stage of the overall change process, was a good predictor of what that same critique would yield after a formal plan was developed and put into action. Therefore, the purpose of this thesis is to provide an analysis of the early plans and intentions of the DD-21 program officers who will most likely be responsible for the implementation of optimized manning, and to recommend improvements in view of change management theory.

1. Create an Analytical Foundation

The change management plans described by Beckhard and Harris (1987) and Ansoff and McDonnell (1990) are based on systematic methods for identifying stakeholders, the critical mass, sources of resistance and appropriate intervention strategies. A recommendation from this study is to build acceptance and commitment for optimized manning based on these formal analytical models. The strength of this approach is in documenting influential stakeholder interests and managing and collaborating with stakeholders to attain desired changes. In sum, strategy is aligned with systematic stakeholder management. A weakness of this approach is stakeholder's needs often evolve over time, and maintaining a formal systematic approach is itself difficult to maintain.

The models of Beckhard and Harris (1987) described in Chapter III do not require analysis that provides a single "correct" number to every question. In fact, they state that in the case of the critical mass, such an analysis may not be possible. A stakeholder analysis may begin with a study of acquisition organization charts to determine which organizations are tied to the development of DD-21 manpower requirements. Those stakeholders could be augmented with addition of other relevant stakeholders from the navy's manpower organization chart, and so on. The point is to systematically identify, validate, analyze, and act-on evolving stakeholder concerns and issues related to optimized manning. Extensive number generation and strict statistical analysis are not required. What is required is an understanding of all the dynamics of implementing this type of an approach to building acceptance of change.

2. Select a Change Leader

Beckhard and Harris (1987) state that the best choice for a change leader and change management system is one that creates the least tension with the current organizational structure while at the same time creating a favorable environment to develop and implement the new structure. Rogers (1995) describes a list of six characteristics of a successful change agent. This individual must: (1) actively engage and involve critical stakeholders, (2) be aligned with change implementers rather than change planners, (3) diagnose the needs of the stakeholders relative to the change and ensure they are addressed, (4) be able to empathize with the target stakeholders' concerns and uncertainties, (5) be in contact with the lowest-echelon stakeholders, and (6) be trustworthy and credible in the eyes of the stakeholders.

The implementation plan for DD-21 and optimized manning should have a person or persons filling the roles of change leader and change manager, ideally with the characteristics previously mentioned. It is not the purpose of this study to designate the change leader for optimized manning. However, Beckhard and Harris (1987) state that an innovation that differs greatly from the current state, requires leadership and management structure that is separate from the current structure and uniquely tasked with the implementation of the change. A close examination of the leadership requirements for optimized manning implementation may determine that one person cannot fill the roles of both change leader and manager. One individual may not be able to coordinate and monitor the planning and implementation process and simultaneously marshal the support

of optimized manning stakeholders. In such a case, the DD-21 hierarchy should consider the appointment of a separate change leader and manager.

3. Create an Activity and Commitment Plan

According to cited change management literature, activity and commitment plans are the working elements of a process for diagnosing resistance and building acceptance of change. This study has examined a potentially relevant form of such a process, the accordion method of managed resistance. That method depends on a series of independent modules (action steps) that are related to a particular concern of a particular stakeholder group. Each module utilizes independent planning, training and implementation schedules that proceed along a timeline for the overall innovation process.

The advantage of such a system is its ability to adapt to changing time urgencies, and the parallel nature of the modules. Each module is designed so that it can proceed unhindered by the modules around it. Unlike a sequential planning and implementation process, the delay of one program module will not halt the entire acceptance building effort. The creation of separate program modules also turns the entire optimized manning program into an incremental process.

Change management theory indicates that such a process will usually meet with less resistance because the organization is presented with the innovation one small bit at a time rather than all at once. Indeed, when one considers the entire set of changes underway in the Surface Fleet, it can be argued that DD-21 is itself merely an incremental step in a larger change process. In a broader sense, DD-21 might be presented as a logical step in a long procession of changes that includes Smart Ship and leads ultimately to the end-state

goal of an effective, efficient, streamlined military organization that maximizes the utility of every available resource, including its officers and sailors.

4. Create a Feedback Mechanism

The success of the change leader and the innovation he or she promotes will depend on the flow of timely and accurate information according to the systematic model. Details of the DD-21 proposals must disseminate to Fleet operators, and in turn, their reactions and recommendations must come back to the program planners. As a consequence of a properly designed communications link, the designers of optimized manning may discover any number of innovative ideas outside their immediate staff, and Fleet operators will know their concerns are being addressed.

The final element of the commitment plan described by Beckhard and Harris (1987) is the creation of a monitoring system, designed to assess the progress of the commitment building effort. The monitoring system requires timely information from critical stakeholders who are actively participating in the implementation plan. The purpose of such a monitoring effort is to enable the change manager to effectively direct resources to those stakeholders who have not yet accepted and committed to the success of the innovation. Similarly, feedback allows change leaders to adjust strategies accordingly.

In the data, a DD-21 program officer claims to have extensive ties to many of the manpower initiatives underway in the Navy. Those ties can form the basis for a feedback network linking the stakeholders of optimized manning with the program office at NAVSEA. However, such a system would require well defined reporting methods that would enable the change leader to continually evaluate stakeholders, monitor progress,

and make adjustments necessary in a shared power environment. In sum, feedback is integral to determining the effectiveness of the process for building acceptance. The Navy does not lack for a thorough communications system. Command relationships are also well defined. Together, these existing systems can serve as the foundation of a very rich medium for the type of communication called-for by the change management literature, however, incentives are needed to encourage objective feedback throughout the military hierarchy without regard to rank or position.

C. FINAL SUMMARY AND SUGGESTED FURTHER STUDIES

Optimized manning is clearly a radical departure from the traditional manning and operating philosophy of the Surface Navy. Change management theory says that organizations that are instituting large-scale changes to their operating philosophy, culture, power structures or pay and reward systems can expect to encounter resistance to that change from many quarters (Ansoff & McDonnell, 1990). The changes contained in the optimized manning proposals for DD-21 promise to touch nearly every aspect of the Surface Warfare Community, and there is evidence that the Fleet operating core is reacting to those proposals with skepticism and concern.

This thesis has examined the plans of the DD-21 program officers for the management of resistance and building acceptance among the stakeholders in this change effort. A varied data set has been evaluated against theoretical models for managing change. The results of that analysis indicate the developers of optimized manning have acknowledged the likelihood of resistance, and believe that such reactions must be mitigated to

successfully implement optimized manning. However, the plans for building acceptance for optimized manning appear to be based largely on anecdotal and intuitive data. This thesis recommends that systematic methods be used to identify and analyze stakeholders, sources of resistance and develop a commitment plan. A change leader should be selected to coordinate the development and implementation of optimized manning, and a robust feedback network is needed to provide the change leader a mechanism to judge the effectiveness of the effort to build acceptance and reduce skepticism and concern.

This thesis has touched on only one small aspect of organizational change management as that topic applies to the DD-21 program. Opportunities for further research are numerous and include the following:

1. How will the Navy deal with the simultaneous requirements of one Fleet built around traditionally manned and operated ships and a second Fleet built around DD-21?
2. Conduct a comparison between the DD-21 proposals, the manning reduction experience of the Dutch Navy and the study of manning reduction in the merchant marine conducted by Richard Walton (1987).
3. What are the costs / benefits of the various DD-21 manning structure proposals such as crew rotation and the transfer of most maintenance responsibilities ashore or to a private entity?
4. Evaluate the resistance management POAM referred to in this study against change management theory.

5. Develop and validate a list of stakeholders and/or sources of resistance to optimized manning in support of the resistance management POAM referred to in this study.
6. Examine the potential for change in the Surface Navy's structure from a machine bureaucracy to a professional bureaucracy as it moves to implement DD-21 and optimized manning.

APPENDIX A. DD-21 SURVEY

1. Have you read or heard of the proposals for DD-21 to reduce crew manning to approx. 95?

Yes _____
No _____

2. If yes, would you describe your reaction to those proposals as confident, skeptical or undecided?

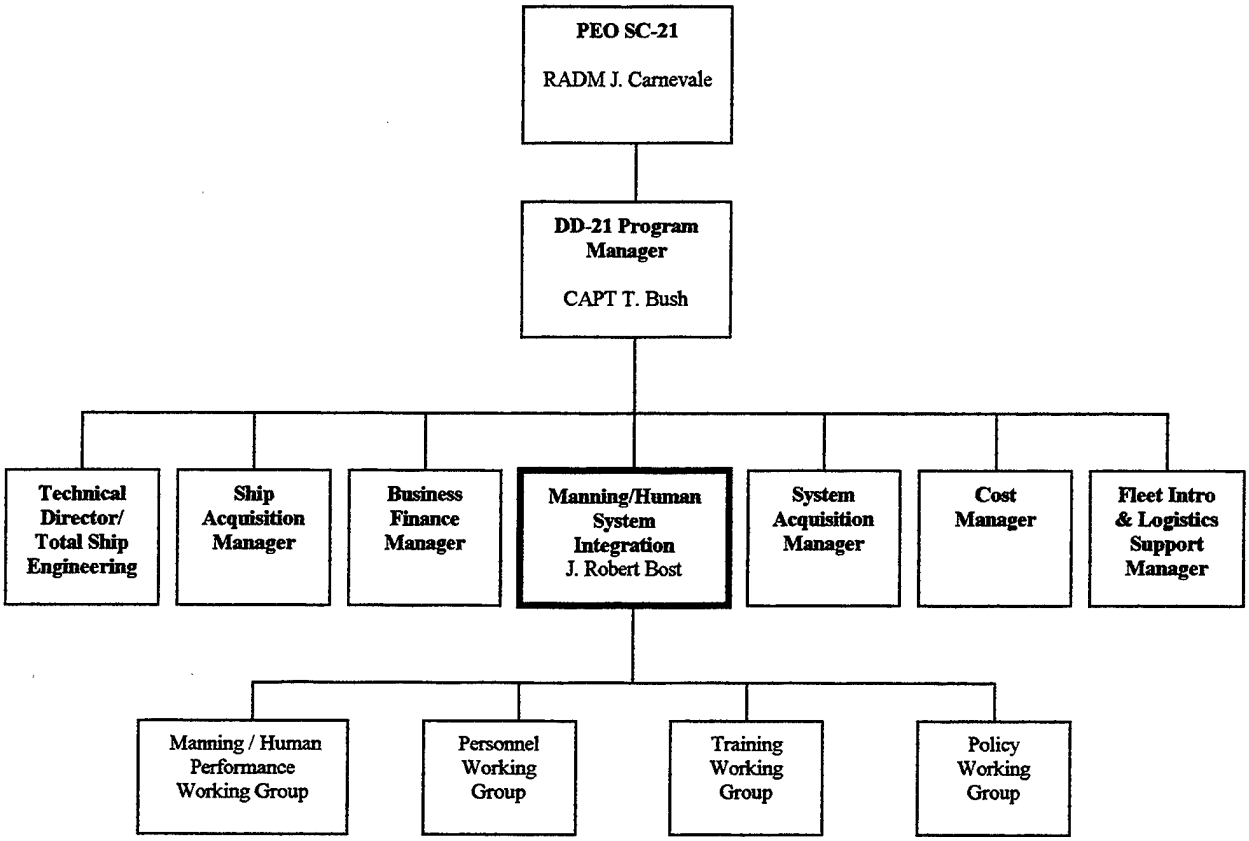
Confident _____
Skeptical _____
Undecided _____

3. From the list below, select four task areas that you think will cause the most problems for the successful implementation of the manning proposals for DD-21:

____ Admin/Record Keeping
____ At Sea Watch Cond. I
____ At Sea Watch Cond. II
____ At Sea Watch Cond. III
____ At Sea Watch Cond. IV
____ DC major fire
____ DC major flood
____ Flight Quarters
____ House Keeping
____ In Port Duty
____ Onboard Training
____ PMS
____ Preservation/Corrosion Control
____ School House Training
____ Sea & Anchor Detail
____ UNREP
____ Working Parties

4. Please add any comments you have and/or list additional areas of concern you believe have not been adequately examined for the DD-21 manning program.

APPENDIX B. DD-21 ORGANIZATION CHART



Source: NAVSEA PMS-500M

APPENDIX C. BOST INTERVIEW QUESTIONS

1. There are two overarching questions:
   a. What are the major drivers or facilitators for successful implementation of DD-21 reduced manning?
   b. What are the major sources of expected resistance to successful implementation of DD-21 reduced manning?

2. Who are the major stakeholders in DD-21 with respect to reduced manning?

3. What roles do you expect them to play in a successful implementation?

4. What specific plan has been developed to capitalize on them?

5. What is being done to deal with resistance to DD-21 proposals?

6. A consultant for optimized manning is developing a POAM for building acceptance.
   a. Who will be responsible for implementing that plan (not by name)?
   b. What characteristics are you looking for in that position?
   c. Where in the chain of authority will they fit?
   d. How will that POAM be binding on the entire DD-21 program office?

7. How do you view the potential success or failure of the CNO's Inter-Deployment Training Cycle (IDTC) initiatives, Smart Ship and DC-ARM relative to your efforts to build acceptance of DD-21 reduced manning?

APPENDIX D. INTERVIEW QUESTIONS FOR OTHER SUBJECTS

1. There are two over arching questions:
    a. What are the major drivers or facilitators for successful implementation of DD-21 reduced manning?
    b. What are the major sources of expected resistance to successful implementation of DD-21 reduced manning?

2. How will you assess resistance during DD-21 program planning and implementation?

3. Who are the stakeholders in reduced manning?

4. How will you validate that list?

5. What specific plans are being developed to capitalize on those stakeholder's knowledge or expertise?

6. The DD-21 office is developing a POAM for building acceptance of optimized manning.
    e. Who will/should be responsible for implementing that plan?
    f. How is the POAM organized (independent projects or sequential process)?
    g. What are the likely elements of the POAM (education and training projects, technical demonstrations, etc)?

7. How do you view the potential success or failure of the CNO's Inter-Deployment Training Cycle (IDTC) initiatives, Smart Ship and DC-ARM relative to your efforts to build acceptance of DD-21 reduced manning?

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